DOMESTIC ENGINEERING

Whole No. 1034 Vol. LXI. No. 1. 445-447 Plymouth Ct., Chicago. October 5, 1912

The Heating and Ventilating of School Houses—IV.

By Charles L. Hubbard

Furnace Heating. This is not ordinarily used in buildings of more than four to six class rooms on account of the number of fires to be cared for, it not being best to heat more than two rooms from a single furnace. Fig. 1 shows a good arrangement of the furnaces for a four

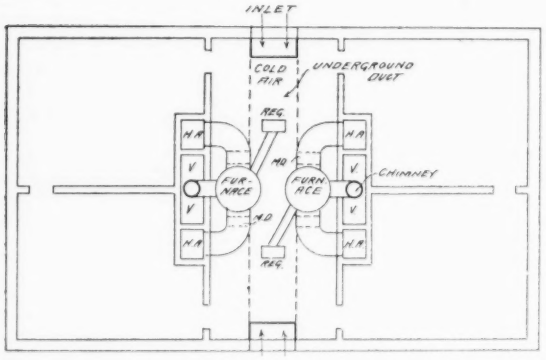


Fig. 1.

room building. The furnaces are duplicates and each supplies two class rooms, and also does one-half the corridor heating. Each furnace has two cold-air inlets, one from each side of the building and each of sufficient size to

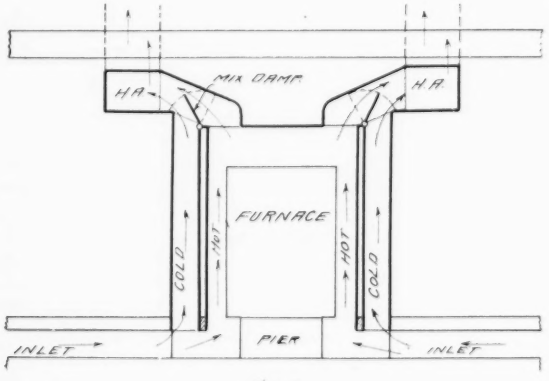


Fig. 2.

furnish the entire air supply. A section through one of the furnaces, showing the cold and warm air ducts and the mixing dampers is shown in Fig. 2. The cold air is brought from windows on either side through underground ducts to a chamber surrounding the furnace, and both the warm and cold air passes to the mixing dampers, and from there to the rooms as indicated. A plan of the flues at the first floor level is shown in Fig. 3, which illustrates the method of heating the air in the vent flues to accelerate the draft. This is done by the waste heat from the iron chimney stack which is carried up in a brick shaft forming the vent flues for a pair of class-rooms. An elevation of the stack of flues above the first floor is shown in Fig. 4, and illustrates the method of capping the stack and arranging the main dampers for closing off the vents at night.

The grate area of each furnace is found by allowing 3 square feet of surface per class room (40 pupils per room) and one additional square foot for each 46,000 T.u. required toward corridor and vestibule heating. The warm air flues to the class-rooms each have an area of

$$\frac{30 \times 40}{250} = 5 \text{ square feet,}$$

which in practice is commonly increased to 6, in order to offset the frictional resistance

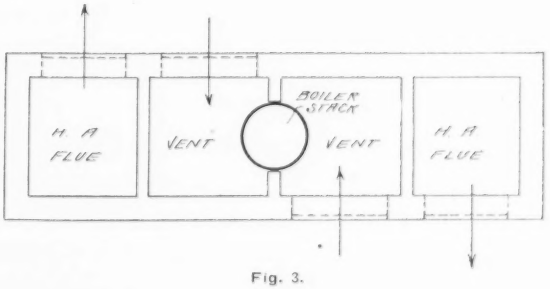


Fig. 3.

of mixing dampers, etc. The cold-air ducts are made the same size as the warm air ducts, that is 6 square feet area each, and are provided with adjustable dampers for throttling the air supply down to the right amount in windy weather.

Only one inlet should be used at the same time, and that on the windward side of the building. When the vent flues are arranged as shown in the cuts, a sectional area of 5 square feet will be found of sufficient size, as the flues are of greater height than the supply flues and therefore have a stronger draft when well heated by the boiler stack. In the case of furnace heating the inlet and outlet openings to the flues may be of the same size as the flue itself and covered with a grille of either round or square wire about $\frac{3}{8}$ in. in thickness and having a 2 in. mesh. The cold-air inlets in the building wall should

be covered with a galvanized wire netting of about ¾ in. mesh.

The main toilet rooms should be ventilated through the fixtures into closed chambers back of them, which in turn are connected with a special flue heated by means of a stack heater having a grate not less than 12 in. in

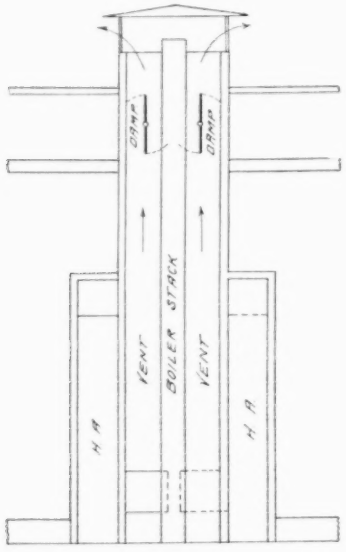


Fig. 4.

diameter. This heater is supported upon iron bars resting in the side walls of the flue and the vent ducts should be brought in below it as shown in Fig. 5.

Indirect Gravity Heating.

In this case the air supply to each ventilated room is determined according to the class of building and the number of pupils, making use of Table III. Next determine the heat units required for raising the air supply from zero to 70 degrees.

The heat loss from each room is then computed by means of the factors in Tables IV, V and VI, and the

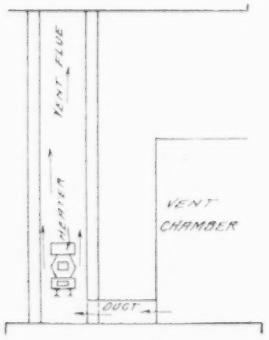


Fig. 5.

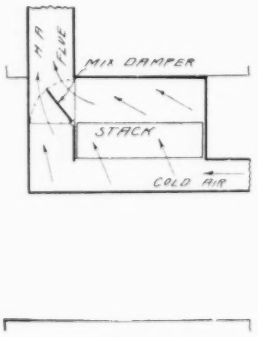


Fig. 6.

heat required for ventilation is added to these results for all rooms where ventilation is required.

The total heat required per hour for ventilated rooms divided by 600 (from Table VIII) will give the square feet of indirect radiation required. For rooms having direct radiation only, divide the heat units required per hour by 250 or 300, according to whether cast-iron radiators or pipe coils are used.

Boilers.

Next find the boiler horsepower by dividing the total heat units required per hour for all purposes in zero weather by 30,000. Dimensions of horizontal tubular boilers of good proportions are given in Table XIV, and may be used without change. The stock sizes of many manufacturers contain too many tubes for the size of shell and are therefore not so efficient as the arrangements given in Table XIV, which are recommended by the Hartford Steam Boiler Inspection and Insurance Co. If it is a small building and cast-iron sectional boilers are to be used, the grate area should be determined as already described.

TABLE XIV.

Diameter of shell in inches.	Number of 3-inch tubes.	Length of tubes, in feet.	Horsepower.
42	34	10	20
		11	22
		12	24
		13	26
48	44	11	33
		12	36
		13	38
		14	41
54	54	12	38
		13	41
		14	44
		15	47
60	72	13	52
		14	56
		15	60
		16	64
66	90	14	70
		15	75
		16	80
		17	85
72	114	15	94
		16	100
		17	106
		18	112

Boilers of the tubular type should generally be designed for a safe working pressure of 80 to 100 pounds per square inch, although run at a much lower pressure, which adds to the life of the boiler and gives a much greater factor of safety. While the first cost is slightly greater, the yearly expense is probably no more and the greater safety secured warrants the extra outlay. Details of construction may be left to the boiler maker, if the work is given to a reliable concern, simply specifying the diameter of shell, number, diameter and length of tubes, and the working pressure and factor of safety, the latter usually being taken as 6 in heating work. Diagonal braces are commonly employed in boilers used for heating purposes, as they give better access to the interior for inspection and repairs. A good arrangement is to use all diagonal braces of the solid steel type for boilers up to and including 54 inches in diameter, and a combination of diagonal and through bracing for larger sizes.

Heating Stack.

After computing the square feet of radiating surface required in each indirect heater the next step is to determine the best type of section to use and the most satisfactory method of making it up. Pin radiators about 10 or 12 inches in depth usually give good results when employed for heating the air to a temperature sufficiently high for both warming and ventilation. These are commonly rated at about 15 square feet of surface per section, and if the required size of stack does not make an integral number of sections an additional section should be used for the fractional part unless it is very small. Stacks for schoolrooms should be divided with two separately valved sections in the ratio of 1 to 2. With this arrangement, two pairs of valves (supply and return) will make it possible to use 1/3, 2/3 and 3/3 of the capacity of the stack as may be desired, according to the outside temperature. A common arrangement of stack, casing and mixing damper for a single

class room is shown in Fig. 6, and a group of stacks in a brick chamber for the heating and ventilating of four rooms are shown in plan and elevation, Fig. 7 and 8 respectively. Care should always be taken to arrange the mixing damper so that the cool air will enter the room at the top of the register and the warm air at the bottom, else cool drafts will fall upon the heads of those sitting below. In order to secure this result it may be necessary in some cases to bring the cool air

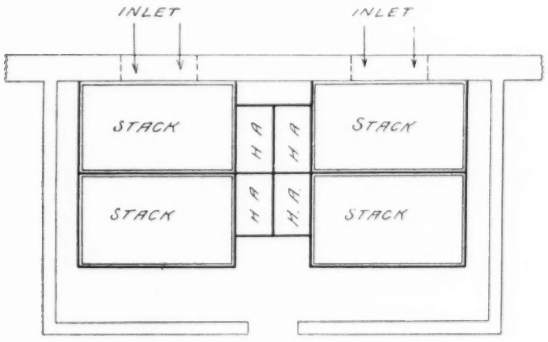


Fig. 7.

in over the top of the stack instead of at the bottom as shown in Fig. 6. In this case the division between the hot and cool air chambers should be insulated by about 1½ inches of plastic asbestos. When several stacks are located in a single chamber they should be separated by galvanized iron divisions as indicated by the heavy lines in Fig. 7, and the cold-air flues should extend 3 or 4 feet below the bottoms of the heaters as in Fig. 2. The reason for this is because the air sweeping across the bottoms of the stacks will become heated to a considerable extent and then enter the cool-air flues if they are not carried down as shown. This is of little importance in cold weather when most of the heat is needed but in mild weather, when the mixing dampers are set for cool air, it may result in overheating the rooms.

A common arrangement of the cold-air rooms and inlets for an eight to sixteen-room building is shown in

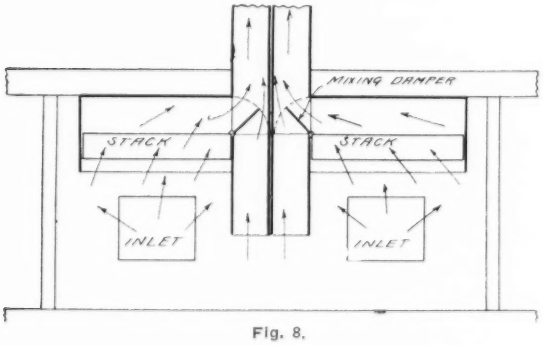


Fig. 8.

Fig. 9. Each cold-air chamber may contain either two or four stacks, and takes its fresh air normally through two inlet windows as indicated by the arrows. The chambers are connected up in pairs, and in case of winds, the openings on the leeward side of the building may be closed and the air for both of the chambers be taken from the same side of the building. When this is done the inlet windows should be made of double size and the overhead duct large enough to supply a single chamber. Dampers should be provided in all fresh air inlets and be easily operated from the basement floor by means of chains and pulleys. Wire netting in light channel iron frames should be placed in the openings for keeping out animals, leaves, etc.

Single indirect stacks are commonly hung from the overhead floor joist and enclosed in galvanized iron casings, while groups of stacks in cold-air chambers are usually carried on light iron beams resting in the sur-

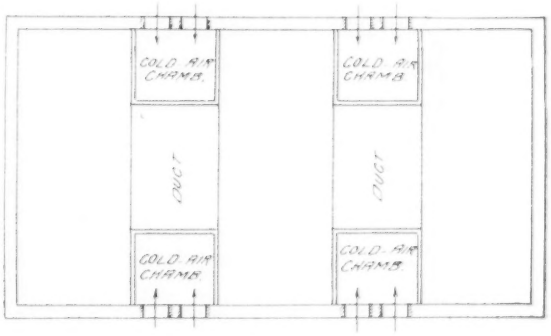


Fig. 9.

rounding walls. Doors of good size for air rotation during the night should open from the cold-air chambers into the basement. This is an important detail of any system of indirect heating, and doors from classrooms into corridors and from corridors into basement stairways be opened to allow a complete rotation of air through the stacks when heat is required without ventilation.

The heating stacks for the first-floor corridors are

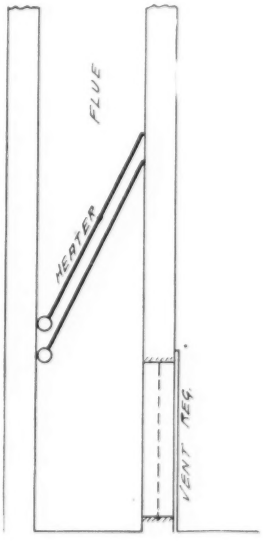


Fig. 10.

commonly called "foot-warmers," and are placed under floor registers near the main entrances. They are usually made to contain from 80 to 100 square feet of radiating surface each, and if more heating capacity is required, direct radiators may be placed just inside the outside doors to catch, and overcome to some extent, the inrush of cold air when the doors are opened. The greater part of the heating surface for both lower and upper corridors is best placed on the first floor, as the

warm air readily passes up the stairways to the upper floor, so that about all that is necessary in this location is a small amount of direct radiation near the windows.

Foot-warmers are sometimes made to take their air directly from the basement, but it is better practice to take a portion at least from out of doors in order to give pure air to the corridors. A long narrow register, say

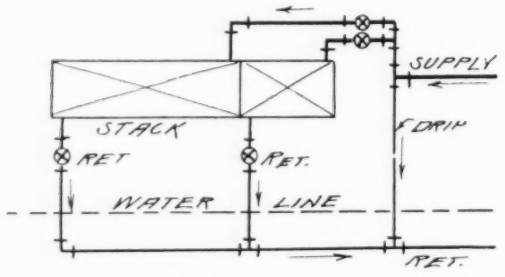


Fig. 11. Elevation.

12 to 18 inches, is better for a foot warmer than a wider one, because, for a given area, it will accommodate more pupils at one time.

Small rooms, such as offices, teachers' rooms, coat rooms, and toilets, are best heated by direct radiation, of the cast-iron sectional type, while ceiling coils of wrought-iron pipe are employed in basement rooms in order to bring them well above the water line in the returns. The location of an overhead coil makes it less effective for the general warming of the room than when placed near the floor, hence, it is necessary to increase the surface from 50 to 60 per cent when computed by the usual methods to get the same results as with a floor radiator. Sometimes indirect stacks are used for ventilating purposes only, and direct heating coils placed in the rooms. In this case the stacks should contain about 200 square feet of surface per classroom, and the direct radiation computed by the methods already given. In case of gravity steam systems the hot boiler stack is commonly utilized for heating the toilet vent flue and circulation is accelerated in the classroom vents, by means of aspirating coils or heaters of the general form

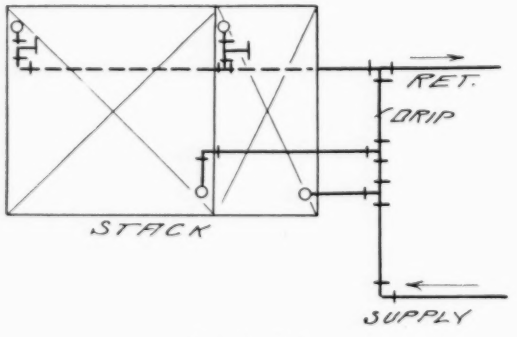


Fig. 11. Plan.

shown in Fig. 10. These are made up of wrought iron "Nason tubes" screwed into cast-iron branch tees, or special headers, and placed in an inclined position just above the vent register, as indicated. The free space for air flow through a heater of this kind is about one-half the gross or overall area, so that to obtain the full flue area the length of the pipes must be equal to twice the depth of the flue. Heaters of this kind should contain from 30 to 40 square feet of heating surface for each classroom to obtain the desired results.

Heaters of the cast-iron type placed in the center of the flue should not be used as they often cause local currents within the flue itself and do not produce a strong draft through the register.

The steam piping for a system of this kind is very simple as a pressure of 2 to 5 pounds per square inch is sufficient to produce a circulation through the stacks and radiators, and the condensation is returned to the boilers by gravity.

The method of making the steam and return connections with a stack at the end of a supply line is shown in plan and elevation in Fig. 11. The stack is divided into two sections in the ratio of 1 to 2 and separate valves provided as indicated in the cut. The end of the supply pipe is dripped back into the return so that condensation will not collect in the piping when the stack is shut off. Sealed returns should always be employed when possible, and siphon loops used for branches which cannot be located below the water line of the boiler. All low points in the supply piping should be properly dropped to the corresponding returns, and graded away from the boiler. The

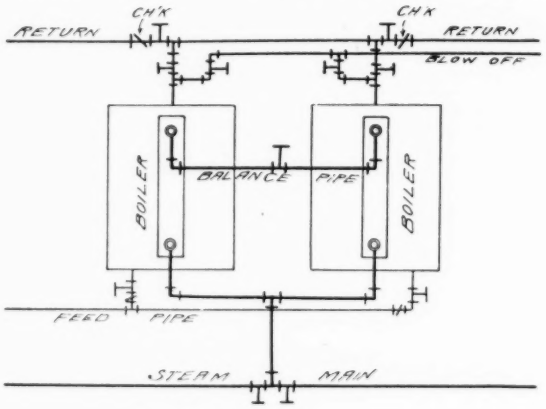


Fig. 12.

return mains should grade toward the boiler with a pitch of about 1 inch in 40 feet for sealed returns and 1 inch in 10 feet for dry or overhead returns. The return mains should connect with a header at the rear of the boiler, checks being placed in the return pipes as shown but not in the boiler connections with the header. An equalizing pipe should also connect the boiler tops as shown in Fig. 12.

TABLE XV.

Diameter of pipe.	Square feet of direct radiation.
1 in.	60
1¼ in.	100
1½ in.	150
2 in.	400
2½ in.	700
3 in.	1,100
3½ in.	1,600
4 in.	2,300
5 in.	4,000
6 in.	7,000
7 in.	10,000
8 in.	14,000

Fan Systems.

Pipe sizes for direct radiation may be taken from Table XV. for runs up to about 300 feet in length, which will cover most conditions of schoolhouse work and is based on a drop in pressure of ¼ pound in each 200 feet length of run. This table may also be used for indirect stacks by counting each square foot of surface as two of direct.

(To be continued.)

Value of the Main Trap in House Connections of Sewers

Summary of Conclusions Reached by a British Committee Who Has Made a Thorough Investigation of This Problem. The Investigation Lasted Five Years.

For the last five years a British Committee has been investigating the relative advantages of the main or intercepting trap commonly placed in the house connections of sewers. This committee had the co-operation of many city officials and sanitary experts in conducting the investigation. Many valuable and interesting experiments were made, and over 5,000 traps in service were examined. The committee submitted its report in the latter part of August this year. The summary and conclusions of the committee, with a selection of the more important passages of the report is published in the current number of "The Surveyor," from which the following matter is taken:

Disadvantages and Advantages of the Main Trap.

The disadvantages of the main trap are four in number, as follows: 1. The trap forms an obstacle to the ventilation of sewers through the house connection and soil pipe, and sewer ventilation is thereby rendered difficult and expensive. This prevention of sewer ventilation through the house drainage system is considered the chief advantage of the trap. 2. The use of the trap involves separate ventilation of the house drains and this necessitates the provision of a fresh air inlet to the drain. Owing to the erratic behavior of air currents this fresh air inlet may become the outlet for foul air, thereby causing a nuisance. 3. The inclusion of the main trap in the house drainage system increases the cost of the drainage system, not alone by the cost of the trap, but also by the cost of the air inlet, and in other ways. 4. The trap is objected to because it forms a serious impediment to the passage of sewage from the house drainage system to the sewer. This frequently results in serious blockage of the drain.

An incidental advantage claimed for the trap is that it prevents the passage of rats from the sewer into the house drain. Such an advantage, if it existed, would be very great in connection with plague. However, rats have been observed to pass through the main trap, both from sewer to drain and from drain to sewer.

Summary and Conclusions.

The summary and conclusions of the committee follow. The disadvantages involved by the use of the intercepting trap are substantial and of serious practical importance, and as the most important of the effects of these disadvantages are concealed from view, they may remain in existence quite unknown to the householder. On the other hand, the construction of house drainage may be simplified by the omission of the intercepting trap. The disadvantages of the trap may to some extent, be obviated. Thus, the objectionable features of the fresh air inlet may be overcome, apparently with out detriment, by omitting this contrivance altogether. The only "ventilation" which appears to be required on a house drain, apart from anti-syphonage pipes, is that which should be provided by an opening at the top of each soil pipe.

Liability to Blockage.

The tendency of the intercepting trap to retain a considerable proportion (averaging, according to our experiments, from 42 to 79 per cent) of the solid matters of the sewage passing through it at any given time, and thus to favor blocking of the trap as well as putrefaction of the sewage before it reaches the sewer, may be diminished to a great extent by using a trap of smaller diameter than is customary at present. The liability of the trap to become blocked appears, however, to be insuperable, and it is this liability which constitutes its most serious disadvantage. The accumulation of sewage in the drain produced by the block, and from which many undesirable consequences may follow, is not usually evident with ordinary use of the drain, and therefore may long remain undiscovered. This unsuspected blocking of the trap and accumulation of sewage appears to be very common, evidence of it having been found in more than 23 per cent of 5,600 traps, which were specially examined.

Although the liability to blocking is inherent in any intercepting trap, its evil effects can be minimized by constructing the house drain, or at least the lower part of it, of iron pipes, and by closing, with a removable cover, the usual open channels in the inspection chamber which is provided as a means of access to the trap. The object of these measures is to ensure that the effects of a block at the intercepting trap may become evident as soon as possible, and may admit of easy remedy without nuisance arising, and also to reduce to a minimum the chance of leakage from that part of the house drain which must be filled with sewage before a block at the intercepting trap can be discovered with ordinary use of the drain.

Barrier to Sewer Air.

On the other hand, it seems to be established that the trap does serve as an effectual barrier to the entry of sewer air into the house drain, which is the fundamental advantage claimed for it. It is not liable to be forced and rendered useless, as has been supposed to be the case, by pressure of air from the sewer. This, it would appear, is chiefly because sewers are not air-tight under practical conditions, and therefore air in a sewer finds easier outlets than the water seal of the trap. The pressure which is likely to force the intercepting trap is limited to that which arises in the sewer connection after its opening into the sewer has been submerged, that is to say, after the aerial continuity of sewer and sewer connection has been destroyed. Likewise, the volume of air which can be forced through the trap is limited to that contained in the sewer connection.

Furthermore, when an intercepting trap has been forced in this way, the water seal is not destroyed. When the pressure is relieved the trap will remain sealed, though, it may be, to a less depth than formerly, and therefore air is not likely to pass continuously through a trap once it has been forced.

In the absence of the intercepting trap, the traps on even an unventilated house drain are, similarly, not liable to be forced by pressure from the sewer, and they are not liable to be forced even after the sewer connection has been submerged, provided the house drain is furnished with a proper ventilating shaft.

If, owing to exceptional circumstances, such as the absence, or the blocking, of the ventilating shaft of the

house drain, pressure is exerted against the traps on the drain, only one trap is likely to be forced—namely, that which has the weakest water seal. Air from a drain is not likely, therefore, to pass into a dwelling through a trap, unless it so happens that the weakest trap of all the traps on the drain belongs to one of the sanitary fittings inside the house. In this connection it needs to be borne in mind again that the water seal of an efficient trap which has been forced is not destroyed. At the same time provision should be made, as indicated in our report, against the tendency of ventilating shafts to become blocked by rust.

The main sources from which air from the sewer may gain entry into a house, in the absence of an intercepting trap, are defects in the drain and the open top of the soil pipe or ventilating shaft, such entry being in either case merely passive, or actively induced by aspiration, in consequence of differences of temperature. The entry of sewer air into the dwelling through defects in the drain may be practically excluded if the house drain is constructed of iron pipes. An iron drain can be made absolutely air-tight without serious difficulty, and usually remains air-tight, contrary to what is feasible in the case of stoneware drains. It is probable, therefore, that the entry of sewer or drain air into a house can be limited in practice to what may come from the ventilating shafts outside.

Assuming that, in a given case, air from a drain or from a ventilating shaft can enter a house, the essential question is whether there is any difference, so far as the inhabitants are concerned, between the entry of sewer air plus drain air and the entry of drain air alone. For if in the absence of an intercepting trap, sewer air, together with drain air, can escape from a given drain or a ventilating shaft into a dwelling, it is equally possible, assuming the presence of an intercepting trap, that drain air alone will escape into the dwelling.

We have collected and carefully considered the chemical evidence, the bacteriological evidence, the results of recent and exact experiments on animals, as well as the general and epidemiological evidence, in their bearing upon the existence of definite risk to health as a consequence of the access of sewer air into the house drain in the absence of the intercepting trap. It is difficult to summarize this evidence, and it must therefore be studied in the body of our report. Briefly, however, it may be said that the chemical evidence shows that the most frequent characteristic of sewer air is the presence of smell. This smell is due to the presence of certain volatile substances given off from sewage in such minute quantities as to be harmless in themselves, apart from smell, or possibly, to effluvia from moulds which may be attached to the walls of sewers. It is established that the smell of sewer air is only very exceptionally due to sulphuretted hydrogen, contrary to what has been supposed, and that this dangerous gas is usually not present, even in minute traces, in the air of sewers.

Bacterial Dangers.

The bacteriological evidence shows that micro-organisms of sewage origin are very rarely present in sewer air. On the other hand, they may be present in drain air in large numbers. This difference is the result of the splashing of sewage which occurs in drains, and which does not usually occur in sewers. The effect of any given splashing in a drain is of extremely short duration, the bacteria subsiding with great rapidity, but air currents, produced by ventilation, may meanwhile have conveyed these bacteria for considerable distances along the drain or into ventilating shafts of the drain. On the other hand, owing to the rarity of bacteria of sewage origin in sewer air, which has been repeatedly established, opportunity very rarely occurs for their convection by air currents, from sewer to house drain, in the absence of the intercepting trap; indeed, direct experiments show that the possibility of such convection is so small that its practical importance in relation to danger to health is infinitesimal. The bacteriological evidence undoubtedly indicates that the bacterial danger of sewer air is incomparably less than the bacterial danger of drain air, and that, therefore, the entry of sewer air into a house is of correspondingly smaller importance bacterially than the entry of drain air.

The foregoing evidence is confirmed by experiments on animals which show that while animals may be adversely affected by exposure to the concentrated effects of putrefying excrementitious substances, they are affected, either in their growth and nutrition or in their susceptibility to disease, by exposure to sewer air.

It is also confirmed by the general and epidemiological evidence, which is to the effect that human beings deliberately exposed to the effects of sewer air do not appear to be affected in health; that the association of the incidence of certain specific diseases, such as enteric fever and diphtheria, with drain defects which allow of the entry of sewer air as well as of drain air into houses, is almost identically the same as the association of similar defects with the absence of disease; and that the experience of districts without intercepting traps does not show that their absence has been harmful.

The necessity of the intercepting trap, on bacteriological or epidemiological grounds, has not therefore been established. It appears, in fact, that the characteristic of sewer air which is of practical importance is its smell, and that, therefore, the question as to the necessity or otherwise of the intercepting trap is narrowed down to the issue whether, in any given case, sewer air will be more perceptible or less perceptible to the sense of smell with or without the trap.

Nevertheless, the question is one of serious public health importance. Human beings vary greatly in their perception of smells, and offensive and unpleasant odors affect the comfort and physical well-being, and probably the health, of the individual. It is obviously most important that public health authorities should make every effort to be sure that both sewers and house drains are so designed and constructed that the opportunities of their contributing smell to the atmosphere shall be reduced in every possible way.

Exceptional Circumstances.

In ordinary cases the smell of sewer air is less perceptible, not more perceptible, when the intercepting trap is omitted, and chiefly, it would appear, because in the absence of the trap opportunity is afforded for sewer air to escape entirely at a height above the ground. But there are exceptional cases where the intercepting trap may be required, in order to prevent perceptible smell from the escape of sewer air from the tops of ventilating shafts of house drains. Sewage may be so offensive that the escape of sewer air, even at a height, is a perceptible nuisance, so much so that it may be necessary to close as many sewer ventilators as possible, whether at the ground level or at a height; house drains may be connected with cesspools, flat or storage sewers, or with sewers which are old and foul with deposit;

houses may be built in terraces, one above the other, so that the ventilating shafts of the house drains of one terrace are at or about the level of the ground of another terrace, and so forth.

As circumstances in this respect will vary in different localities, the question whether, in order to prevent nuisance from smell in such exceptional cases, the intercepting trap is or is not required in any locality, or part of a locality, is one which will need to be considered and determined by the local authorities and their advisers in the light of local conditions. Where, however, the trap is considered to be necessary or desirable, the measure for providing against the effects of blocking of the trap should not be neglected—namely, the closure of the open channels in the inspection chamber giving access to the trap, and the construction with iron pipes of the main portion of the house drain, unless this is remote from the house.

Ventilation of Sewers.

The importance of the effect which the presence of the intercepting trap has on the ventilation of sewers, on which much stress has been laid, has probably been exaggerated. The free ventilation of sewers appears to be unnecessary either for the prevention of pressure of sewer air on traps or for the safety of sewermen, except in the case of sewers which are large enough to admit them. Even in such sewers, however, it is dangerous to rely on ventilation alone, and special precautions should always be taken. Moreover, it is exceedingly difficult to insure that sewers are freely ventilated, even when the most elaborate measures for this purpose are adopted. On the other hand, the prevention of nuisance from smell renders it necessary that any openings which may be deemed to be requisite for the ventilation of sewers should not be at the ground level.

The relationship between the splashing of sewage and the temporary presence of sewage microbes in drain air, and the wafting of such microbes to considerable distances by currents of air, which has been established in the course of our inquiry, appears to be a matter of practical importance, whether the intercepting trap is present or not. The bacteriological evidence suggests that if exposure to drain air is related, as many suppose it is, to attacks of sore throat or other septic affections, the explanation may be found in the liability of drain air, unlike sewer air, to carry in suspension large numbers of microbes of sewage origin. It is desirable, therefore, that the possibility of splashing should be taken into account in the construction of drains, in order that it may be reduced to a minimum. It is likewise important, whether the intercepting trap is present or absent, that the tops of soil pipes and of the ventilating shafts of house drains should be as remote as possible from windows, not only with a view of avoiding smell, but also of minimizing the chance of sewage microbes, which may be present in drain air, being blown into the house through the windows.

DANGER OF DISTILLED WATER.

Continued use of distilled water reduces the strength of the physical organism, because, while distilled water is chemically pure and free from germs, it contains nothing but oxygen and hydrogen, says "Harper's Weekly." The indispensable mineral salts are left behind during the process of distillation. As long as life persists in the body the elimination of mineral salts goes on and this means the rapid demoralization of the organism. Demineralization predisposes the system to tuberculosis. The numerous cases of tuberculosis among the young sailors of the French army are attributed to the demineralization of the organism by continual use of distilled drinking water, the water used aboard ships of war, where every effort is made to protect the men from bad hygienic conditions of the life below decks. The fact is regarded as of very serious interest. The surgeons of the French navy are studying the best means of treating the distilled water used aboard ship with mineral matter.

A MODERN PLUMBING AND HEATING ESTABLISHMENT.

We reproduce herewith an exterior view of the attractive plumbing and heating establishment of M. B. Crawford & Son, of Oswego, N. Y. E. T. Crawford, a very capable young man, has been taken into partnership with his father and the combination is a splendid one.

M. B. Crawford & Sons' Plumbing Establishment at Oswego, N. Y., as It Appeared on July 4, 1912.

Auburn, N. Y.—W. F. Meaker, of 1149 Genesee Street, who conducts one of the most modern plumbing and heating establishments in this city, has an imposing list of contracts signed up. Here is a partial list: Steam heating in the John W. Rice store; steam heating in the Beardsley Block; plumbing and heating in the Auburn Thread & Twine Company's factory, and the heating installation in several residences.

Syracuse, N. Y.—The plumbing firm of Meehan & Kehoe, 118 N. Warren Street, has been dissolved by mutual consent. D. J. Kehoe will continue the business at the same address and he would be glad to receive catalogues and price lists from manufacturers and jobbers of plumbing supplies. Mr. Kehoe runs a "Cole 40" and he says that stays with the business.

Office Practice in Estimating Heating and Ventilation

Paper by John D. Small, Read Before the American Society of Heating and Ventilating Engineers, at Its Meeting in Detroit, Mich., July 11-13, 1912

In December last year the author sent out twenty-nine letters and sets of questions to members of the society on office practice in estimating heating and ventilation, and received seven full replies and two encouraging letters. More answers would doubtless have been sent had time permitted.

The questions and a summary of the answers are as follows:

1. *What rule do you use for estimating radiation?*

The majority of expressions on this question favored a formula based on the number of heat units loss through various cooling surfaces and materials and the number of heat units required to compensate for air change due to leakage and exposure. Coefficient tables for this purpose are found in a number of handbooks and the losses due to air change represent what the engineer's judgment dictates, except where fixed by law. Carpenter's and Mill's rules are largely used also.

2. *How many air changes per hour do you allow in the following classes of buildings?*

Residences.	Office Buildings.
Hotels.	Store Buildings.
Hospitals.	Theaters.

Factories (except where exhausters are used).

This factor seems to be a very indefinite one where the amount of air displaced is not fixed by law or otherwise. In buildings where no mechanical ventilation is provided, the rate of air change would be effected by a number of causes, one of the principal causes being natural leakage, which varies with the kind of construction, the exposure, the wind velocity and the height of the building.

Under the head of construction, the kind of window frames used has a great deal to do with the rate of infiltration of air. The sides of the building exposed to prevailing winds will, of course, show a marked increase in air displacement over the protected sides. Air currents, however, between high buildings, due to deflection from one to the other, will often affect the surface which otherwise would be protected. Tests made by Mr. H. W. Whitten have demonstrated that with wind velocities below 6 miles per hour infiltration is reduced to a minimum; while with velocities as high as 30 miles per hour a very substantial effect is produced upon the rate of air change of the interior of the exposed portion of the building. Again, the leakage is relatively greater as the building increases in height due to increased wind pressure at increasing heights. From the foregoing observations it is important to use considerable judgment in arriving at the maximum allowance to compensate for losses due to this element, and in the absence of a fixed rule, the following schedule, in the author's opinion, would be a safe basis for calculating the amount of heat required under maximum conditions of air change in addition to that required to offset losses through the cooling surfaces. Allow air changes per hour for various rooms and classes of buildings as given in the table:

Table of Number of Air Changes to be Used in Heating Circulation.

Office Buildings—Portions above grade—1 air change per hour.
Basement, general—4 air changes per hour.
Mechanical Plant—10 air changes per hour.

Factory Buildings, which have no mechanical or natural ventilation, one change per hour. For factories where large doors from the outside are frequently opened, about four air changes per hour.

Residences—having loose windows, two changes per hour.

Churches—Four changes per hour except small rooms, which should have five to six changes per hour. These data for churches contemplate mechanical ventilation.

The majority of public buildings and many of the factories require ventilation or the fan system of heating. The usual specifications of air supplies per person are as follows:

Hospitals, ordinary—35 to 40 cu. ft. per min. Hospitals—epidemic—80 cu. ft. per min.

Hospitals—Tuberculosis:

	Air Change.
Dejection Room	6 Min.
Toilet Rooms	6 "
Bath and Duty Rooms	8 "
Kitchen	3 "
Serving	10 "
Fumigating	10 "

Workshops—25 cu. ft. per min.

Prisons—30 cu. ft. per min.

Theaters—20 to 30 cu. ft. per min.

Meeting Halls—20 cu. ft. per min.

Schools—30 cu. ft. per min. per child and 40 cu. ft. per min. per adult.

Hotels—Following air changes are usual:

Room.	Air Change.
Engine	6 Min.
Kitchen	1½ "
Restaurant	6 "
Base Toilet	5 "
Billiard	10 "
Barber Shop	8 "
Dining Room	15 "
Palm Room	12 "
Buffet	8 "
Cafe	8 "
Lobby under balcony	8 "
Main Lobby	20 "
Banquet Hall	15 "
Retiring Room	10 "
Kitchens	8 "
All others	15 "
Except Toilets	6 "

Libraries:

Room.	Air Change.
Corridors	15 Min.
Basement Rooms	15 "
Reading Rooms	12 "
Inside Rooms	8 "
Corner Rooms	7 "
Toilet Rooms	5 "

Laundries—should have an air change every 4 to 6 min. Radiation on sides of buildings subjected to prevailing and cold winds should be increased 10 per cent up to the 10th floor and 15 per cent above.

3. *In your opinion is it more practical to heat and ventilate with hot air only or to ventilate with tempered air and provide direct radiation for heat losses through cooling surfaces?*

While a difference of opinion prevails on this subject, it seems to be desirable to provide direct radiation for use when fans are shut down. The argument is advanced that omission of direct radiation makes it impossible to heat without ventilating, as the fan must be run in order to heat. Direct radiation in additon to the fan system, one to offset the cooling effect of walls and glass and the other for ventilation only, makes a flexible system and admits of uniform regulation of temperature for various exposures perhaps better than the fan system only.

It is also true that the relation of supply and exhaust opening in a given room sometimes results in short circuiting and defeats thorough ventilation as well as requiring direct radiation to care for portions not warmed on this account. Therefore, it would appear that where possible it would not only be more practical but more satisfactory results could be guaranteed if direct combined with the blast system is installed.

4. *Do you consider it good practice to install radiation in factories only sufficient for normal winter temperatures and increase pressure to compensate for deficiency when maximum winter temperatures prevail?*

The consensus of opinion is decidedly against installing radiation in factories only sufficient for normal winter temperatures and increasing steam pressure to compensate for deficiency when maximum winter temperatures prevail, especially where exhaust steam is used for heating, as the engines would be subject to back pressure and general efficiency re-

duced. The money saved on first cost of the heating system would be spent in operation later, thus resulting in poor economy on the long run. It would, therefore, appear that this method would not be considered good practice, although owners are often influenced to cut down the first cost in this way, not fully realizing the net result.

5. *Do you advocate using mains as heating surface or covering them throughout?*

The conditions and class of buildings govern largely whether the mains should be used as heating surface or should be covered. Under the head conditions, would be considered the cost of covering, the location of mains and the length of run together with the length of risers in connection with the mains. For low buildings and not excessively long runs, the mains are very often left uncovered, and without bad effects. In high buildings and in central heating systems, however, it is essential to cover mains in order to diminish the steam pressure and therefore temperature to a minimum extent at the terminals. There have been cases where the steam chilled or condensed to such an extent due to surrounding temperature that it became necessary to cover the mains. The consensus of opinion is to cover the mains, as a rule, for best results in heat distribution.

6. *To what extent do you advocate the use of vacuum devices in heating systems?*

The use of vacuum devices in heating systems is looked on with favor in the majority of cases, especially where exhaust steam is used for the following reasons: It aids circulation of the steam; tends to remove back pressure; allows small piping to be used, thus reducing cost for long runs; eliminates air valves with the attendant annoyance occasioned by adjustment, leakage, etc.

However, there are many instances where vacuum systems are of no particular advantage. On the other hand, there are cases where it is absolutely necessary to install such a system to accomplish circulation of the steam and the return of condensation. On the whole, installations would be benefited by the use of vacuum devices. In this connection it has been the author's observation that pipe sizes have been reduced to such an extent that instead of circulating steam at or below atmospheric pressure it was really necessary to carry from 2 to 8 lb. steam pressure to overcome the resistance, in supply piping, a condition which defeats one object of a vacuum system. With a differential existing at each unit it is important to eliminate undue resistance to the flow of steam to obviate carrying excessive vacuum to balance this resistance.

7. *In your opinion, is it feasible to standardize methods of estimating heating and ventilating in different classes of building where there is no law governing the installations?*

This is a delicate question and does not permit of definite answer. The judgment of the engineer is a large factor in this connection. The author's thought in putting this question was to ascertain if, for instance, this society could consistently go on record as favoring the adoption of the method of a vacuum system. With differential existing at each unit of estimating direct radiation on the heat unit basis and establish given values for various conditions and classifications and construction materials.

8. *In large open rooms, such as in stores, factories, etc., would you figure the radiation the same on all sides and then place a larger proportion on the most exposed or windward side? If so, what proportion? Or would you figure it the same on all sides and add radiation on the most exposed sides? If so, how much?*

The majority favor figuring the radiation on the same basis for all exposures and placing a larger proportion on the most exposed or windward sides, it being the idea that the heat will equalize, due to wind pressure, and eventually find its way to the opposite side of the building, whereas, if the same proportion were placed all around, the temperature on the windward side would be too low, and on the opposite side too high. To figure the radiation the same all around and then add to that on the most exposed or windward side would require more radiation than otherwise, and would not be so effective and economical as the first method.

9. *In figuring on the basis of the heat loss through various cooling surfaces, what authority do you use for these coefficients?*

Carpenter, Wolff, Péclet, Box, values deduced from the German authorities by Kinealy and various handbooks which quote values deduced by recognized authorities are referred to for these data. These tables are very helpful in figuring the heat losses through various building materials and combinations of materials which compose the walls and roof of a structure.

10. *In estimating radiation, do you consider the type of window construction, whether loose fitting or provided with patented weather strips?*

11. *If windows are provided with weather strips, would you reduce the amount of radiation? If so, how much?*

Ordinarily it is assumed that the sash and frames are of wood, and not provided with weather strips. If concealed weather strips are used the radiation may safely be reduced from 10 to 15 per cent. While if metal sash and frames are used the radiation should be increased.

12. *In your opinion, is it feasible to heat a factory building comprised of two or more typical floors by running pipe coils around the outside walls, any given number of pipes high, regardless of the contents or floor area?*

Given a factory building, exposed on four sides and two or more typical floors, it has been held that to install pipe coils around the walls to care for cooling surfaces is sufficient to maintain proper temperature without taking into consideration cubical contents. This seems to work successfully in some cases, and in others it is found that radiation is insufficient. There is a certain percentage of a room of large dimensions which may be neglected with regard to air change, but just what proportion is yet to be satisfactorily answered. The author would like to obtain a discussion on this point particularly and wishes to thank the members who responded in the interests of the foregoing.

Willing to Work.

Hungry Higgins—Excuse me, mum, but do you want your refrigerator cleaned out?

Mrs. Wickwire—There is nothing in it but a few cold victuals.

Hungry Higgins—Exactly, mum.

Knew Them All.

"Do you care for Esperanto?" he asked the sweet young thing as they were demolishing plates of cream after the opera.

"Which was he?" replied the sweet young thing, "the one with the blonde mustache?"—Los Angeles Evening Herald.

Jones had just run over to see if Mr. and Mrs. Blank would go to the theater with them. Mrs. Blank was sorry, but, unfortunately, Blank was out. Probably he was at the club. She would telephone. The following conversation ensued: "Halloa! Is this the ——— Club? Is my husband there? Halloa! Not there? Sure? Well, all right, then; but hold on. How do you know? I haven't even told my name." "There ain't nobody's husband here—never," was the wise attendant's reply.—Telephony.

THE STEAM RADIATOR.

By E. W. (Bill) Nye.

Reprinted by request, and by courtesy of The American Press Association.

The steam radiator at a hotel furnishes more cause for serious thought, especially in the still watches of the night, than any other problem I know of. Most of them have water on the brain. When you go into a room and smell the hot, damp carpet, you know at once that the radiator is not seaworthy.

The other night Mr. Burbank's radiator began about midnight to get restless and palpitate. At first it just gave two or three kicks at itself and moaned. Mr. Burbank turned over in his bed and said: "Ah, the radiator is repairing itself." Then he went to sleep. Soon after he awoke with a start and heard the radiator rumble like a distant freight train crossing three or four other lines of road. At the end she seemed to hit one coil with another and began to mix things. He looked at his watch and saw that it was 12:30. Tired nature then yielded, and with a long-drawn sigh at thirty days he went to sleep. He awoke again to hear the radiator riveting its boiler and generally refitting itself. He lighted his last match and saw that it was 1:30. He tried to go to sleep, and began counting 1,000 to settle his nerves. He was joined by the radiator. He threw off the covers and said: "There is water in that radiator. That's what makes it practice all night trying to play, 'The Awakening of the Lion.' I will let the water out, and then I can sleep." So he got up softly and started for the electric light to turn on same. He was a little dazed, and stepping high, he stepped into his trunk. Then he knew where he was, and started across the room, but was met by the center table, which had a late lunch on it. It contained, among other things, some bread with jam on it, and some cheese that had come from Germany at a time when the quarantine regulations were looser than they are now. He upset this table. "Now, I know where everything is," said Mr. Burbank. "The cheese is in the center of the room, and I can always find out where I am, even without a light." Just then in trying to turn on the electric light he stepped in the jam and cheese at the same moment. He also found that the electric light had been turned off at the cellar. No one can know just how he would feel under these circumstances unless he has had a similar experience. Mr. Burbank had now lost all idea of direction, for the cheese still clung to the sole of his foot and roamed around the room attracting attention from the radiator.

Mr. Burbank is a tall, slender man, looking very much as Henry Irving would if he had been trying to board at the Gastritus House during the winter, and train himself to represent thought. Dressed in the simple robe of night, with his dark hair released from its confinement and tossed about his shoulders, and with a cheese sandwich on one foot, and a corned beef and mustard poultice on the other, now and then stepping on a revolving bottle of Halford sauce, he made a strong picture as he saved himself from falling by catching at the towel which hung on a rack. He went three times around the room, feeling on the wall for the button of the bell, but missing it, as he could not get the right height, he opined. In the morning he found that the button was concealed by the head-board of his bed and did not work anyhow. It now became easy to locate the radiator by the sound it made, also by a little puddle of hot water which he stepped out of with such a wild start that he skinned his knee and hopped around over the lunch in great agony. As he felt the jam oozing up among his toes, he became irritated, and said, "If I had it to do over again I would go to the other hotel." There were two hotels, one called the Phyloxeria and the other the Bergamot House. We were at the Bergamot. Mr. Burbank approached the radiator and turned the valve open quickly, then stepped back into the Halford sauce as a stream of hot water squirted across the room into the cozy bed which he had just left. The little valve-nut was now so hot that he could not turn it back for quite a long spell, but after a while, by the use of the towel, he managed to turn it off enough so that only a small stream came from it, and he filled a china cuspidor with water, also the wash-basin and his valise. This he did while trying to empty the basin out of the window. A great deal of water was spilled when he stepped on the Halford sauce bottle again. He emptied the basin while the cuspidor was filling, and then emptied it while the basin was filling. Sometimes in going back and forth he did not step on the Halford sauce bottle at all. He does not remember how many times he did these round trips, but as the gray dawn began to steal timidly across the sullen sky there stood at the open casement, a tall man with a pale intellectual face, and in a simple fluttering and severely plain negligee with wet sleeves. He was just pouring the last pitcher of hot water out at the window, and below lay the watch-dog—drowned. The watch-dog lay, with glassy eyes, chained to the house, and the watch-dog's honest bark was peeled off in places where the hot water had struck him.

The moral of the above incident is that the man who is wise and who has been abroad as far as Escanaba, Mich. or Esquimault, B. C., will open the escape valve of a radiator when it acts that way and let the hot water "squirt and squirt and squirt." He will not try to save the carpet.

Big Hit.

Maud—Miss Oldun thinks that hotel clerk just lovely.

Ethel—Why so?

Maud—He wrote opposite her name on the hotel register, suite 16.—Boston Transcript.

The Best Time to Go.

"Aye vant to buy a ticket to Sweden," said the blond young person to the clerk at the booking office. "Aye vant a ticket to Gothenburg."

"When do you want to go?" asked the clerk in an impatient tone.

"Aye vant," she said with simple directness, "to go van the boat starts."

A Boomerang.

Mark Twain wished to borrow a certain book from a neighbor in Redding, Conn.

"Why, yes, Mr. Clemens," said the neighbor, "you're more than welcome to it. But I must ask you to read it here. You know I make it a rule never to let a book go out of my library."

Some days later the neighbor wished to borrow Mark Twain's lawn mower.

"Why, certainly," the humorist acceded. "You're more than welcome to it. But I must ask you to use it here. You know I make it a rule never to allow my lawn mower to go off my lawn."

IN THE CHICAGO HEATING TRADE.

By "The Spectator."

Now that "Old Mose" Muskellunge has been measured, masticated and mounted the next event on the sporting calendar of Chicago heating contractors is the old new game of business. To say that business this fall is good is to convey an insufficient idea of the local situation. To say that it is booming is not so much to exaggerate as to mislead. There is no building boom in Chicago. Almost every possible anti-boom influence has been in evidence since the new leaf was turned in January. Strikes, excessively severe weather, high-prices, a timid money market and—oh horrors, yes—that "presidential year" bogey all conspired in an effort to hand building enterprises a gentle jolt. If they have succeeded at all it has been only to check what might have been a so-called boom. For that signal service, much thanks to them, for what building is now under way is intended quite apparently to serve some tangible, legitimate need and under such circumstances there is usually enough money to go around thereby lending a healthy and necessary zest to the business game.

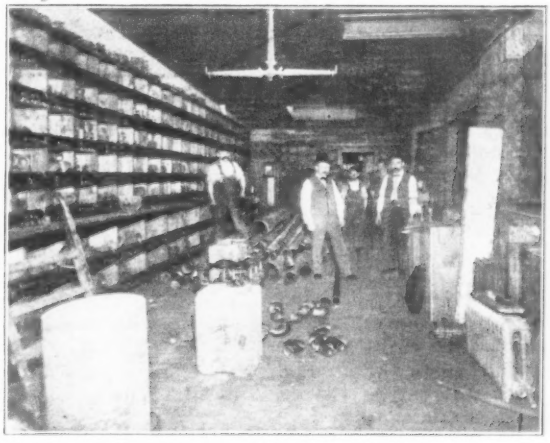
One not uninteresting feature of the situation is the position of some of the manufacturers. Forecasting, under the most favorable conditions must be conceded to be a trying and hazardous undertaking. Weather prophets, aided by the nicest machinery that science has been able to devise for the purpose, fail in their efforts with annoying frequency. How much more difficult must the problem be for a manufacturer who would use his discerning eye to discover just how much of its money the purchasing public is likely to spend for his merchandise! Whispering rumor has it that an unfavorable early outlook (perhaps including that "presidential-year" bogey) had some restraining influence on the prognostications of certain boiler and radiator manufacturers. However much of truth there may be in that doesn't really matter very much now. The important question is: how and when—particularly when—is the purchasing public going to get its radiators and boilers? Somebody has hinted that a distribution of factories westward from the middle west might help some generally in such a predicament as the present and also tend specifically to soothe the growing pains in that region. Of course that is only a thought. No doubt many of the manufacturers who make a practise of having timely thoughts have already had it and discarded it or have bought choice sites here and there at advantageous prices. Another thought is that some manufacturer perhaps was unable to meet competition awhile back and is now forced by reason of the short crop to maintain the "sheet" absolutely. So many fanciful hypotheses could be worked out if the editor would only give us space for them.

One other feature growing out of this unexpected volume of fall business in Chicago is the reversed status of the heating contractors themselves. None of them ever says so yet each of them knows perfectly well that he belongs to one or the other of two factions. One camp includes those whom experience has taught that a profitable heating business can be maintained only by virtue of a reasonable profit on every transaction. The other—and as recent history shows, the camp that went in for a clean-up early in the year—includes those to whom experience seems merely to bring more experience. How little these latter contractors, booked up to their eyebrows with cheap work, are enjoying their reversal can be judged accurately only by beholding their long faces or by listening to their dolorous and perennial tale of woe. Meanwhile optimism radiates from those long-headed ones who have accumulated wisdom and bank credits with the years.

To summarize—this fall the heating business is generously good in Chicago. If we can get radiators and boilers some contractors are going to get a correspondingly good return on their investments of brains and capital—others are probably going to pay their accounts with the supplymen and successfully meet their pay roll.

A BUSY HEATING CONCERN IN CLEVELAND, OHIO.

Becker & Siedel, one of the prosperous heating concerns of Cleveland, report that they have found it necessary to secure larger quarters in order to take care of their constantly growing business. On Nov. 1 they will move into the modern building at 234-238 Prospect avenue. Mr. Becker, president and treasurer of the firm, is a pioneer



The Up-to-Date Workshop of Becker & Siedel, Cleveland, O.

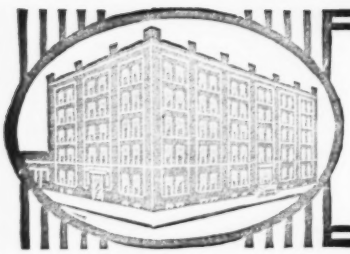
in the heating trade, having been engaged in the business for over forty-one years, thirty-one years of which he has conducted his own business. The accompanying picture shows the present workshop of this concern. Among the recent contracts they have on hand are: heating and ventilating the 15-story Leader office and newspaper building; installing heating systems in the annex of the Hollenden hotel and in the W. G. Marshall building.

OBITUARY.

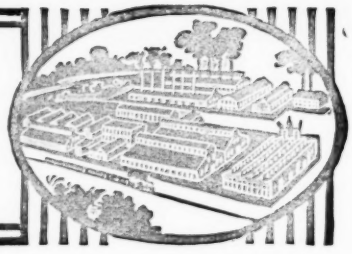
Rudolph A. Lohr.

Rudolph A. Lohr, of Bridgeport, Conn., who was engaged in the plumbing business at Rowayton, Conn., was drowned in the Rowayton river when a boat in which he and an employe were crossing, capsized. Russell Hall, the other member of the party, was rescued from the water by an eye witness but Lohr never came to the surface. Lohr and Hall had been doing some work at the Rowayton Launch Works during the morning of September 17 and at noon started to cross the river in a flatbottom boat. The little craft was apparently overloaded with iron railings and tools and in some way shipped enough water to swamp her.

Trenton, N. J.—The Greiner Plumbing Co., of 256 North Clinton street, has under way the installation of the plumbing, heating and ventilating work in Dr. Sommers' new residence on West State street. This is a $3,700 contract. This company is also doing the plumbing and heating work in eleven new residences in this city.



News of Interest Among the Wholesalers and Manufacturers



CENTRAL SUPPLY ASSOCIATION'S FALL MEETING.

The Central Supply Association will hold its annual fall meeting at the Stratford Hotel, Chicago, on Wednesday, October 23rd, according to announcement made by Secretary Paul Blatchford, 127 North Clark Street, Chicago.

DOUBLING ITS CAPACITY.

The Auburn Leather Goods Co., of Auburn, N. Y., is enlarging its plant extensively and when the installation of additional machinery is completed the company's capacity will be just exactly doubled.

STANDARD SANITARY MFG. CO., INCREASES ITS CAPITAL STOCK.

The Standard Sanitary Mfg. Co., of Pittsburg, Pa., has increased its capital stock from $7,500,000 to $10,000,000. This increase consists of $1,500,000 preferred and $1,000,000 common stock. It was necessitated by the growth of the company's business and the consequent enlargement of its manufacturing plants.

NEW MANAGER AT SYRACUSE BRANCH.

C. B. Porter has been appointed manager of the Syracuse branch house of John Weekes & Son Co., Watertown, N. Y. Mr. Porter has been associated with this company for some years, covering New York State. He now succeeds F. P. Wadley, who has been transferred to the home office at Watertown.

THE L. WOLFF MFG. CO. OPENS NEW BRANCH AT ROCHESTER, N. Y.

The L. Wolff Mfg. Co., of Chicago, has opened a new branch at Rochester, N. Y., in a seven-story building at St. Paul and River Streets. The new branch will be in charge of W. E. Bruce, who has a large acquaintance with the trade in that part of the country. A complete line of plumbing supplies will be carried in stock.

APPOINTS PUBLIC COMFORT STATION COMMITTEE.

J. J. Ryan, president of the National Committee of the Confederated Supply Associations, has recently named a committee to assist in furthering as much as possible the establishment of public comfort stations. This committee was selected from the supply associations and is comprised of men who are thoroughly conversant with all matters pertaining to sanitation. The members of the new committee are: J. Walter Lyons, of the Keystone Pottery Co., Trenton, N. J.; Frank W. Hubbard, of the W. B. Hubbard & Sons Co., Boston, Mass.; E. Hammann, of the J. L. Mott Iron Works, New York City; W. A. Myler, of the Standard Sanitary Mfg. Co., Pittsburg, Pa.; Herman Hoelscher, of the L. Wolff Mfg. Co., Chicago.

BUILD THREE-STORY ADDITION TO ITS FACTORY.

The Century Sanitary Manufacturing Co., of Eastwood, N. Y., has recently completed a three-story addition to its factory. The new building is 50x100 feet and is situated directly between the New York Central and West Shore railroad tracks, having a siding on the latter. This addition will give the company greatly increased facilities.

AMERICAN SOCIETY OF HEATING AND VENTILATING ENGINEERS APPOINTS NEW COMMITTEE.

At a meeting of the Board of Governors of the American Society of Heating and Ventilating Engineers, at the Society's headquarters in New York City, on September 28, 1912, the following committee was appointed to cooperate with a committee of the National District Heating Association on educational matters in heating and ventilation: E. F. Capron, Chicago; D. M. Quay, Cleveland; W. F. Devendorf, Rochester, N. Y.; M. L. Foote, Columbus, and W. C. Green, Cincinnati.

PLUMBING, HEATING AND VACUUM CLEANING WELL REPRESENTED AT PITTSBURGH EXPOSITION.

The Western Pennsylvania Exposition Society, whose president is Francis J. Torrance, first vice-president of the Standard Sanitary Manufacturing Co., is at present holding its twenty-fourth annual exposition, and much space has this year been devoted to the exhibition of plumbing and heating goods as well as vacuum cleaning systems. That local master plumbers are interested was evidenced by the fact that the Pittsburgh Master Plumbers' Association visited the exposition in a body on Wednesday evening, October 2nd.

DEPARTMENT HEADS OF INTERNATIONAL HEATER CO. PROMOTED.

Irving L. Jones has been elected treasurer of the International Heater Co., Utica, N. Y. Mr. Jones has been with the company ever since its organization and for a number of years at the head of the accounting department, and he is eminently qualified by long experience for the position which he now assumes. John K. Simpkins, formerly manager of the New York office of the International Heater Co., has been promoted to the position of Eastern Sales Manager, with headquarters at Utica, and has already moved his family to that city. Mr. Simpkins' position covers the general oversight of

the sales force of the home office, and the Boston and New York branches. Robert J. Clist, of Richmond Hill, L. I., succeeds Mr. Simpkins as manager of the New York office. Mr. Clist has been with the company for a number of years and has a wide acquaintance in the New York district. Walter Jones has been promoted to the position of superintendent of the manufacturing department at Utica, and he brings to this position the experience of years in manufacturing. These promotions are along the line of the policy of the company to take for the responsible heads of departments the men who have proved their efficiency by their service and fidelity in minor positions.

PERSONAL MENTION.

James Hay, of the Beler Water Heater Co., Pittsburgh, Pa., has just returned from Scotland, where he spent the summer.

* * *

Charles Miller, president of the Miller-Hubbard Mfg. Co., Sturgis, Mich., was registered at one of the hotels in Chicago this week.

* * *

W. S. Babson, secretary of the Tay Co., Los Angeles, Cal., was in Chicago this week on his return from a tour of the Eastern cities.

* * *

E. V. Brigham, secretary-treasurer and general manager at the Union Sanitary Mfg. Co., Noblesville, Ind., was a visitor to the Chicago trade this week.

* * *

Jas. J. Weldon has resigned from his position with the Weldon & Kelly Co., of Pittsburgh, Pa., to become Pittsburgh representative for the Sanitary Co., of Cleveland, O.

* * *

W. A. Hennesey, who has for several years been connected with the Duquesne Sanitary Co., of Pittsburgh, Pa., has accepted a position with the Harris Pump & Supply Co., of that city.

* * *

Gus E. Albert, the indefatigable New York state envoy of Geo. W. Heiland, New York City, drove into Auburn, N. Y., one day last week in a taxicab, in which he called on the trade there. Mr. Albert claims this vehicle is absolutely essential to him in his business as his varied line of samples of graphite fuller balls is so extensive he feels that it would be impossible to get around economically in any other way.

* * *

Charles B. Ball, chief sanitary inspector of the Bureau of Health, Chicago, was one of the delegates to the International Congress on Hygiene and Demography, held at Washington, D. C., September 23 to October 5. While in the city he paid a visit to the Washington plumbing department, which he supervised for some years. Mr. Ball complimented the officials on the great advancement made by the Washington department since he left and placed it well toward the front in the rank of the cities of the countries, with reference to plumbing.

SEPTEMBER TOURNAMENT OF WESTERN TRADE GOLF ASSOCIATION.

The Western Trade Golf Association held its regular monthly tournament at the Calumet Country Club, Burnside, Illinois, on September 25th. A notice was sent to each member inviting him to bring a guest with him, and a great many did as they were requested. At 8:40 a. m. the party started from the Randolph Street station and spent the forenoon playing rounds for qualifications. About twenty-five players were on the scene. After luncheon the regular contest was started. A stein was the prize for the winning pair in each foursome. Scores were as follows:

	Qualifying Round.	Winners of Steins.
First Flight.		
J. W. Watson	44	
Jno. McDonald	48	Best Ball.....88
vs.		
S. O. Dugger	47	
F. D. Keeler	48	
Second Flight.		
E. L. Bruce	49	
W. B. Dale	51	Best Ball.....92
vs.		
R. R. Sterling	51	
E. W. Sanborn	51	
Third Flight.		
E. Buehler	53	
J. M. Stannard	54	Best Ball.....91
vs.		
L. C. Huckins	53	
P. Blotchford	54	
Fourth Flight.		
A. S. Frampton	54	
C. D. Little	54	Best Ball.....96
vs.		
H. M. Sedgewicks	55	
J. D. Dugger	56	
Fifth Flight.		
J. F. Tuttle	56	
A. A. Ainsworth	58	Best Ball.....94
vs.		
H. E. Keeler	57	
D. E. McCabe	57	
Sixth Flight.		
H. H. Hughson	60	
N. H. Blotchford	61	Best Ball.....93
H. de Joannis	67	
Seventh Flight.		
W. T. Morgan	71	
A. F. Johnson	71	Best Ball.....85

S. O. Dugger won first individual prize with a low score of 83 and his name goes on the association cup. Nearly all members and their guests remained for dinner and the awarding of the prizes at the clubhouse after dinner. This will probably be the last meeting of the association this season.

THE "HYGIENIC" STEEL CLOSET SEAT.

The Michigan Stamping Co., of Detroit, Mich., reports gratifying success with its "Hygienic" steel closet seat. This seat is made of one piece of steel, specially treated, and goes through upwards of twenty distinct operations in its construction. It is built entirely in the company's own plant, three large presses being reserved for its production. The seat is equipped with piano hinges, four solid rubber bumpers and is finished in the best black

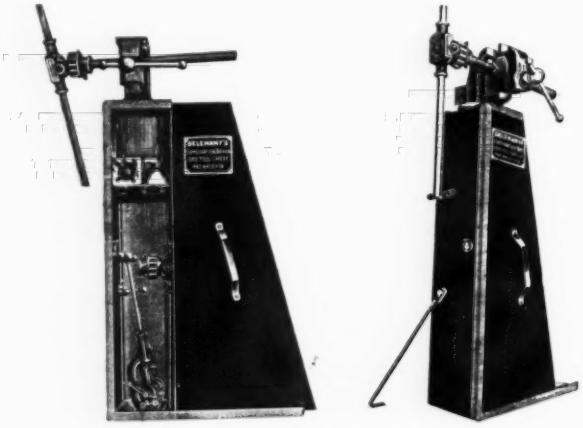
The "Hygienic" Steel Closet Seat.

baking enamel procurable. Each seat is subjected to an acid bath, washed carefully, and then sandpapered. Following this it is dipped and baked to about 350 degrees. A special rubbing process then takes place, after which it is again dipped and baked on two separate occasions. This treatment gives it a clear, clean luster, and the manufacturers claim it is absolutely sanitary and unbreakable.

It makes an ideal seat for factory, school and basement use, as it is claimed that neither dampness nor rough usage has any apparent effect on it. For some time the Michigan Stamping Co. has been experimenting with white enamels with a view to putting this seat out in a clear white finish. They have discovered an article which seems to possess all the properties they are demanding, but before placing the white seat on the market, they will give it every available test to prove its finish and lasting qualities.

COMBINATION VISE BENCH AND TOOL CHEST.

A new device which does away with all trouble in connection with vise benches, and at the same time furnishes a convenient and safe locker for tools, has recently been brought out by the Keystone Die Stock Co., 652 W. 47th Street, Chicago. This combination vise bench and tool closet saves the time spent by workmen in carrying the tools night and morning to and from a place of safety in the neighborhood where they are working, when there is no safe place to leave the tools at the site of the job,

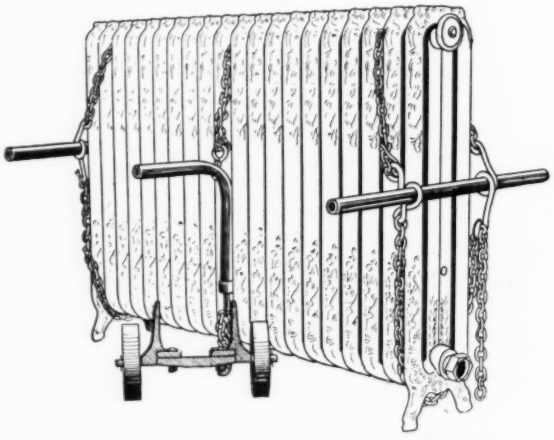


Combination Vise Bench and Tool Chest, Open and Closed.

which very frequently happens. One of the accompanying illustrations shows the combination with the sliding door open and the other one shows the door closed. This practical combination will soon pay for itself as a time-saver, and should find a ready market among master plumbers and steam-fitters everywhere. Detailed information will be furnished upon request to the Keystone Die Stock Co. at the address above given.

COMBINED RADIATOR-CARRIER AND TRUCK.

The accompanying illustration shows Buell's combined radiator-carrier and truck, a patented device for handling all kinds and all sizes of radiators. It is particularly well-adapted to the wants of the steam-fitter in taking radiators up and down narrow and crooked stairways so often encountered, as well as to repair work where radiators are to be removed and only one man, or possibly two available. This carrier is made particularly strong to avoid any chance of accident; the chains used are ¼-in. and 3/16-in., both tested. The lower and heavier chains carry the load, the upper chains act as guides, keeping the radiator in an upright position and assisting when going up or down stairs. The handels are made of 1-in. wrought-iron pipe and can be quickly adjusted to any height radiator to suit a tall or short man. The handles can also be moved sideways when necessary in tight places, or to set a radiator close to wall. The truck is made of malleable iron and shaped to give the greatest possible strength for the weight. It can be quickly adjusted to any width radiator by means of two heavy square head set-screws. When truck is placed under



Combined Radiator-Carrier and Truck.

radiator and a little past the center one man can move the largest radiator any place on the same floor and set close to wall. Those interested in this handy and labor-saving device can obtain full particulars from its manufacturers, Buell Bros., Fulton, N. Y., upon request mentioning "Domestic Engineering."

SLAUTER'S SPECIAL MANIFOLD FITTINGS.

A cast iron soil fitting specialized for lead pipe in connection with iron pipe, manufactured by the W. A. Slauter Mfg. Co., of Orlando, Florida, is said to be meeting with favor among the plumbing trade. It is claimed that the Slauter special manifold fittings eliminate calked and wiped joints and ferrules, and that they are perfectly satisfactory fittings for flexible connections in concrete. The bend is so constructed as to fit all makes of closet bowls, and to set on floor without the 4-inch lead connection, also to give ¼ inch fall to foot. Openings made on the one-half "Y" branch pattern enter bend near bottom of sides in order to allow water pipes to run over all branches under floor. Heel branches are sanitarily arranged high up on heel so as not to allow waste to

Slauter's Special Manifold Fittings.

get back into smaller pipes. By having fitting flush with floor, closet bowl can be set directly into top of fitting. When 4-inch lead is used for putting in this fitting where tile or cement floor is used, it is to ascertain the floor level, making easy and perfect the connections when in closet. The lead connection between the trap and bend is used to connect lead to iron without the wiped joint, using lead for bending and flanging to suit angle and distance. The drum trap shown in the accompanying cut is adjustable on the bottom so as to swing to suit

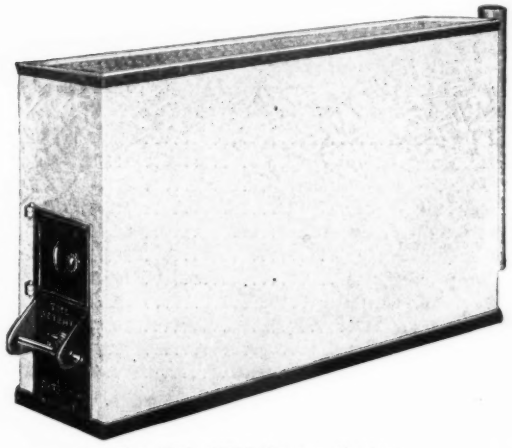
conditions as they exist in installation of plumbing for bath rooms. These fittings are made in various designs with any number of inlets, from one to seven, inlet on one or both sides, with or without heel, with or without 2-inch vent on either side. Complete information on these fittings can be obtained by writing the manufacturers.

A NEW OPPORTUNITY FOR STEAM FITTERS.

The Scientific Heater Co., Whitney Power Bldg., Cleveland, O., has placed a safety garage heater on the market for heating private or public garages, that should interest the progressive steam fitter.

This neat and compact little affair, illustrated in this column, is 37 inches high, 40 inches long, and only 9 inches wide; and is mounted on brackets against the wall. An ordinary gas stove or heater is highly dangerous in a garage because it is likely to cause gasoline fumes to explode; but the "Scientific" heater is constructed like a miner's safety lamp, and, therefore, cannot cause an explosion.

It heats like a warm air furnace by circulating warm air. The products of combustion are vented through a



The "Scientific" Garage Heater.

stack or chimney to the outside air so that no gas fumes can escape to damage the enamel of the auto. The warm air passes out at the top of the heater, and hardly any heat is given out at the side, so that the car may stand right next to the heater without danger of blistering. The action of the heater is very rapid. There is no water to freeze; and the installation is very simple.

Auto owners are realizing the necessity of heating the garage as a remedy against frozen radiators, starting troubles, difficulty of cleaning the car, rusted parts, excessive depreciation, lubrication troubles, etc.

There is said to be a strong demand for these heaters. The retail price is $25.00—installation extra. Readers of "Domestic Engineering" can secure further information by addressing Scientific Heater Co.

A NEAT AND USEFUL BOOKLET.

The International Heater Co., Utica, N. Y., is distributing to master steamfitters and heating contractors a neat booklet on "Advertising Suggestions" that is much appreciated by the trade. Each page contains a different lay-out or sketch together with advertising copy for the International boilers and furnaces, with space at the bottom for the dealer's name to be inserted. The contractor or fitter who wishes to advertise can select any of the pages that appeal to him and the International Heater Co. will send electrotypes free of charge. Any one desiring a copy of this booklet can secure it by applying to the above-named company.

ISSUES NEW BOOKLET.

The Pittsburg Water Heater Co., Pittsburg, Pa., is mailing to its customers a neat booklet entitled, "A Hole in the Ground." This booklet illustrates and describes the steps of advancement in the methods of securing hot water, from the primitive crude idea of placing heated stones in a pool of water in the ground, up to the modern perfected appliances in use today. It also sets forth in a clear and concise manner the merits of the "Pittsburg" automatic gas water heater, Bungalow water heater and the "Lion" tank water heater. Any of our readers who wish a copy of this booklet can obtain same by dropping a card to the Pittsburg Water Heater Co.

CONSOLIDATED ENGINEERING CO'S. NEW CATALOGUE.

The Consolidated Engineering Co., of Chicago, manufacturers of the Van Auken sy tem of vacuum heating, has issued a new catalog descriptive of its heating system, which is as comprehensive and instructive as it is possible for such a work to be. The subjects of steam-heating discomforts, power-plant economy and relative pipe sizes are comprehensively covered. The methods of installation is broadly and clearly dealt with and the specialties which go to make up the system complete are described in detail. The lists of installations subdivided into classes furnish a ready reference list, and their variety, together with the illustrations of large and diversified construction give an idea of the number and magnitude of this company's installations. One page, illustrating the Holy Trinity College, Dallas, Tex., and the Fargo and Central High School, Fargo, N. D., tend to show the adaptability of the system to any climate. Comparative cost of heating two buildings owned and operated by the same owner is the subject matter of another page. Four pages are devoted to railroad work and among these is the great Northwestern Depot in Chicago.

NEW EDITION OF HENDRICKS' COMMERCIAL REGISTER.

The twenty-first annual and revised edition of "Hendricks' Commercial Register of the United States for Buyers and Sellers," published since 1891 by S. E. Hendricks Co., 74 Lafayette Street, New York City, has just made its appearance. Its aim is to furnish complete classified lists of Manufacturers for the benefit of those who want to buy as well as for those who have something to sell. It covers very completely the architectural, engineering, electrical, mechanical, railroad, mining, manufacturing and kindred trades and professions. It is as necessary in the office as the rating books, typewriter or telephone. It establishes a direct link between the buyer and seller. The present is by far the most complete edition of this work so far published. The twentieth edition required 108 pages to index its contents, while the twenty-first edition requires 122 pages, or 14 additional pages. As there are upwards of four hundred classifications on each page, the fourteen additional pages represent the

manufacturers of over 5,000 articles, none of which have appeared in any previous edition. The total number of classifications is over 50,000, each representing the manufacturers or dealers of some machine, tool, specialty or material required in the architectural, engineering, mechanical, electrical railroad, mine and kindred industries. The twentieth edition numbered 1,419 pages, while the twenty-first edition numbers 1,574 or 155 additional pages. Add to the latter about 230 pages of cancellations, errors, etc., omitted from the present edition, and you have a total of 385 pages of new matter, the whole representing upwards of 385,000 names and addresses. An important feature of the Commercial Register is the simplicity of its classifications. They are so arranged that the book can be used for either purchasing or mailing purposes. As an illustration—all manufacturers of a particular trade are classified under a general heading for mailing purposes, each firm or corporation is then subdivided under as many classifications as every variety of their products call for. By this system of compiling, the book is made of equal value for either the purchasing or sales departments.

Again the value of the Commercial Register for purchasing purposes is not confined to its complete classifications alone, it also gives much information following the names of thousands of firms that is of great assistance to the buyer, and saves the expense of writing to a number of firms for the particular article required. The book also contains the trade names of all articles classified as far as they could be secured. These trade names appear in parenthesis between the names and addresses under the classifications where they appear. All in all it is an exceedingly valuable work. It is sent to any part of the country upon receipt of $10, its price.

THE METAL MARKET

VIOLENT ADVANCES IN PIG IRON.

Consumers of pig iron in their haste to cover contracts have bid prices up rapidly against one another. In the South the advance has been violent. Some furnaces are selling at $13.75 and others demand $14.25. Not only in foundry irons but in steel making irons quotations have advanced with undue rapidity. In Pittsburg fully 75,000 tons of basic was sold last week at advances ranging from fifty cents to a dollar over the preceding week. In the last year the total advance has only been about $3. Several furnaces are making preparations to blow in and by January 1 the output will be considerably augmented. Stocks of pig iron which were estimated to be 1,500,000 tons on the first of the year have been reduced to below 500,000 tons; of this quantity, fully 300,000 tons belong to four interests, two steel making concerns and two merchant handlers of pig iron. In the line of finished steel, the congestion is large, many mills refuse to take orders for any deliveries between now and March, solely owing to their inability to make deliveries. Quotations are very irregular and fluctuate from day to day so it would be misleading to give any range this week.

ACTIVITY IN THE COPPER MARKET.

American consumers of copper have again entered the market and large quantities of metal have been purchased for January delivery. Practically all the copper that will be used in November has been sold and most of this business was taken at 17.62½ cents; for nearby deliveries 17.75 cents is asked, and some consumers are wondering where they are going to get the metal needed for October delivery, as a few contracts have not been covered. Exports of copper continue large and in Germany especially the consumption of copper is phenomenal; it is not only breaking all past records but from the outlook of business, even the present high records bid fair to be superceded within the next few months. Somewhat higher prices have been named for Lake and one sale was closed at 18.10 cents.

SPELTER.

Higher prices have again been named on spelter and sold in New York at 7.65 cents. At the smelting works, there is a continued scarcity of ore, and those well informed in trade conditions voice the opinion that higher prices will shortly be named.

LEAD.

The American Smelting & Refining Co. has advanced its quotation to 5.10 cents New York.

OLD METALS.

Dealers' buying prices in New York are:

Light copper	$13.75 to	$14.25
Strictly crucible copper	15.75	15.87½
Uncrucibled heavy copper	15.25	15.50
Uncrucibled copper wire	15.25	15.50
No. 1 machine composition	12.75	13.00
No. 1 brass turnings	9.25	9.37½
New brass clippings	11.00	11.12½
No. 1 comp. turnings	12.25	12.37½
Cocks and faucets	10.50	11.00
Light brass	7.50	8.00
Heavy lead	4.40	4.50
Tea lead	4.05	4.25
Scrap zinc	5.50	5.60
No. 1 pewter	32.50	33.50
No. 2 pewter	9.50	11.00
Close cut solder joints	8.75	9.25
Block tin pipe	44.00	45.00

PORTLAND (ME.) MASTER PLUMBERS' FALL BANQUET.

Members of the Portland, Me., Master Plumbers' Association held their annual fall banquet at Riverton Park, near Portland, on the evening of September 21. The party went out to the park early in the evening and immediately proceeded to have a good time. The banquet was the feature of the evening but there was dancing and other forms of amusement to fill in the time. The invited guests of the occasion were W. L. Blake, Fred A. Rounds, of the C. M. & H. T. Plummer Co.; and F. F. Leavey, of the Smith & Abbott Co., all of Portland. David A. Calhoun was chairman of the committee in charge of the dinner and among those present were E. W. Goss of Lewiston, Frank A. Davis, William A. Miller, M. A. Mayers, J. S. Kane, George A. Stevenson, B. J. Harmon, F. E. Wheeler, Frank P. Bailey, John McDonald, Patrick A. Mahoney, H. F. Fuller, F. H. Stewart, C. Madsen, E. A. Wheeler, John H. Duffy, and R. A. Godfrey.

Among the Plumbing and Heating Contractors

DOINGS IN CHICAGO PLUMBING AND HEATING TRADE.

Nilsen Bros., who have been in the plumbing and heating business on the North Side for twenty years, and have been located at 901 Belmont Avenue for the past four years, are now settled in their new home at 3222-24 N. Halsted Street. Their new building is 50x210 ft., two stories high, of brick construction. It is modern in every respect and was designed especially to meet the requirements of the plumbing and heating business. Among the contracts they now have on hand are: Plumbing and heating the Presbyterian hospital, Wood and Congress Streets; the Craig apartments, 58th and Monroe Streets; heating the Board of Education supply building; apartment building at Irving Park Boulevard and Clarendon Avenue; the Stanley Field building at Franklin and Congress Streets; Bohemian settlement building, 1829 S. Center Street; apartment at Winona and Sheridan Road; installing plumbing in the Nicholas Senn school; school at Hammond, Ind.; Chicago Paper Co. building, 801 Fifth Avenue; Victoria Theater; Chase apartment, Belmont and Sheridan Road; West Park commissioners' field house; Cole Lithographing Co.'s building, and installing air ducts and repairing sewers in the Emmett school. The contracts on their books at present amount to over $175,000.

Hanley Casey Co., 404 West Ohio Street, are installing the plumbing and heating in the new building at Clinton and Madison Streets; also in Butler Bros'. new addition at Canal and Washington Streets.

Mehring and Hansen, 307 W. Washington Street, are installing the heating in the new machinery building at Washington and Clinton Streets.

Noble & Thumb, 2313 Lincoln Avenue, are installing the plumbing in the new building at 21st and Indiana Avenue.

E. Baggot, 19-21 E. Lake Street, is installing the plumbing in the American Book building at 22nd Street and Calumet Avenue. Thomas & Smith, 118 N. Carpenter Street, have the heating contract.

The P. Nacey Co., 929 State Street, has the plumbing contract for the new Overland building, at 2424 Michigan Avenue. L. H. Prentice Co. have the heating contract. P. Nacey also has the contract for the plumbing in the R. C. H. building, at 2434 Michigan Avenue.

Dwyer & Co., 439 Dearborn Avenue, have the plumbing contract for the new Standard Varnish Co's. building at 26th and Armour Avenue.

M. J. Downs, 5538 S. Center Street, has been awarded the plumbing contract for the new flat building to be erected at 5512-14 Garfield Boulevard.

F. O. Schuster, 751 N. Clark Street, has been awarded the plumbing contract for the new flat on Oakdale Avenue, near Sheridan Road. Bishop & Co., architects.

J. G. Weber Co., 807 N. Clark Street, has been awarded the plumbing contract for the new apartment at 4176 Clarendon Avenue. Wm. Sullivan Co. has the heating contract.

NEWS FROM WISCONSIN.

Waterford.—This village has voted to spend $15,000 for installing a water works system. A determined fight was made by the retired farmers' party against issuing bonds to that amount, as they contended that what was good enough years ago was good enough today. The victory means much to the progressives of the village, as the results were obtained only after a hard educational campaign which they conducted.

Racine.—Plans and specifications for a garbage incinerator for this city have been prepared by Lewis & Kitchen, Chicago. Although the first estimate gave the cost as $20,000, the plans will require an additional $5,000. This cost includes many things which can be eliminated, such as concrete driveways, excavation, etc. The sewer connection will have to be run a block to make connection with the trunk sewer, while the plans allow only for a ten-foot extension to the small sewer line in the street in front of the site. No definite action has been taken by the common council in the matter.

Hartford.—Needed improvements will be made at the local railway station by the railway company in installing a modern heating plant and sanitary toilets in the station. Words to that effect have been received by the agent.

Racine.—Bids have been opened by the county board of Racine county for the construction of the Sunny Rest Sanitarium which is to be erected by the county on the Durant Road, southwest of the city. Local plumbers and heating contractors took the opportunity to secure the work for themselves and underbid out-of-town contractors. The Thomas Heating Co., handed in the lowest bid which amounted to $2,527, while the plumbing bid of John Feiner was lowest, at $2,740.

Milwaukee.—Work on the new $300,000 home of the Merchants & Manufacturers' bank is rapidly nearing completion. The heating system is being installed by Grassler & Gezelschap, 214 Third Street. This firm has been busy this year, and it recently secured another good contract from E. J. Earling, who will have a modern heating system installed in his new home at Thirty-fifth Street and Grand Avenue. In the bank building the plumbing will be installed by W. H. Halsey, 432 Jefferson Street.

NEWS FROM THE PACIFIC COAST.

San Francisco.

In the past year one of the most discussed subjects connected with the plumbing trade has been that of credits. The California Master Plumbers at their state convention last summer brought the matter up and presented some telling arguments why the system now in vogue should be modified. Partly as a result of this agitation and partly by reason of their own experiences, the local jobbers are now seriously considering the adoption of a modification of the Milwaukee credit system which has proved a success in other places. While no definite plans have been announced, it is probable that on January first a new arrangement will go into effect whereby there will be a discount of five per cent allowed on bills paid before the tenth of the month following the order, and the regular two per cent discount on the regular thirty-day payment plan. At present but two per cent discount is allowed on the first proposition. The proposed rearrangement is approved by the Master Plumbers' Association and undoubtedly it would do much to encourage cash business. The objection of the master plumbers to the small discount plan is that it encourages and cultivates recklessness, incompetency and even dishonesty, on the part of contractors and dealers. Also that such a system is unfair to the honest and legitimate contractor who tries to maintain his business on a sound financial basis, in that, as is evident, the man who pays his bills also pays the bills of the man whose bills can't be collected. Further it is maintained that an unreasonable basis of competition results from a loose credit system, thus, the unscrupulous or reckless contractor, by counting on long-time credit on easy terms, figures too close and thus sets a price which in a measure regulates the price the legitimate contractor must come to. Hence poor work is encouraged and the worthy contractors are deprived of just profits. The more liberal cash discounts will naturally stimulate cash business and make it harder for the man on credit to set a standard for others to follow. A proper system of credit for reliable concerns, and terms just and reasonable, is of course just as necessary as cash discounts since a large proportion of business is always done on credit. The Plumbers' Association does not object to the extending of legitimate credit, nor favor any plan which will tend to work hardship on the legitimate contractor, but desires simply to see the matter adjusted upon a sound and just basis. The most prominent supply houses express their willingness to co-operate fully toward this end, so it is perhaps only a matter of time before both the dealers and contractors will come to a fair understanding.

The new building of the San Francisco Master Plumb-

ers' Association at Page and Gough streets is now practically completed and it presents a truly handsome appearance. A grand opening ball and reception is being planned and this event will probably take place on the night of October 12, though the date has not yet been definitely set. This new building is a model of its kind, being in every way adapted to the needs of the association and at the same time being a profitable income producer. The two upper stories are given over to two and three-room apartments, with modern appointments, which are to be rented. The hall, offices and reception room are located on the first floor, and in the large basement is the banquet hall and kitchen. The total cost of building and furnishing will be about $50,000, and the total value of the property including site, $80,000.

The Peterson-James Co. has been awarded the contract for the plumbing, heating and oil-burning system for a four-story and basement apartment building, owned by John Roesnfield's Sons, at Polk and Bush streets. Amount of contract, $8,353.

Frank J. Klimm has been awarded the plumbing contract on the seven-story and basement building, to be used for stores and hotel, on Market near Spear Streets, and owned by Sommer & Kaufman. The amount of the contract is $9,000. The steam heating contract on the same structure was awarded to the Atlas Heating & Ventilating Co. Amount, $2,310.

The plumbing, sewer work, etc., on a one-story and basement building on Folsom Street near First, August Mainzer, owner, has been awarded to H. W. Arnold. Amount of contract, $1,969.40.

The stock of plumbing supplies, tools, etc., formerly owned by the late H. W. Collins of Sausalito, Cal., is to be sold by the San Francisco Board of Trade.

The plumbing and heating work on the Clark Hotel at Stockton, Cal., has been awarded to the Pahl & Harry Co., of Stockton. The contract for an air-cooling system for the same building has been given to the California Air Purifying Co., of Stockton.

Plans and specifications are at present being prepared for the installation of an oil-burning plant at the city hall of Berkeley, Cal.

The School Board at Sparks, Nev., are considering plans for installing modern heating systems in the schools of that place.

Kerr & Selbach, of Patterson, Cal., have moved their plumbing and sheet metal department into a new addition recently built on to their hardware store.

Ward & Holladay, plumbers at Concord, Cal., have leased a new building and are to put in a hardware stock.

NEWS FROM NEW ENGLAND.

Massachusetts.

Lawrence.—The Rockingham Park Association is to install a steam heating plant in the club house at Salem, N. H., and has awarded the contract for the work to Riley Brothers of this city.

W. Stockbridge.—Albert Tobey has purchased the plumbing and hardware business of H. E. Hastings at Hinsdale and has taken possession.

Boston.—Bids are being received at the office of Richardson & Driver, architects, in this city, for installing a complete heating and ventilating system in the proposed practice school in connection with the state normal school at Salem.

Marblehead.—New plumbing is to be installed in the Star of the Sea church and the parochial residence on Gregory Street. Donovan & Co. have the contract.

Pittsfield.—Mayor Kelton B. Miller has placed the contracts for the new Miller building which he is erecting as follows: plumbing, W. G. Backus & Sons; heating, vacuum cleaning and sprinkling system, Robbins, Gamwell & Co.

Ipswich.—W. H. Hayes of Lowell has purchased the plumbing business of the late John M. Dunnells.

Wakefield.—David Taggart has sold his plumbing business to William Schaffer, of Everett. Mr. Schaffer will be located on Foster Street opposite Grand Army Hall.

Framingham.—W. B. Frost, plumber and hardware dealer in the Kendall building, has a large force at work on several contracts. He is overhauling the heating plant in the Boston & Worcester Street Railway building at Framingham Junction, is puttng a heater into one of the Dennison Mfg. Co's. buildings; installing two heaters for Mrs. Davenport in a new double house on Beach street and three heaters in D. M. Ray's new apartment house on Grant street.

Ipswich.—WIliam Webber, recently employed by the late John M. Dunnells, has opened a plumbing and tinsmith establishment of his own and hopes to secure his share of the local business. He is located in the Colonial building on North Main Street.

Ashburnham.—The contract for an addition to the heating system at Vushing Academy has been awarded to the Jennison Plumbing Co., of Fitchburg.

Springfield.—Contracts in connection with the new state armory have been awarded as follows: plumbing, F. B. Wood, Everett, $2,525; heating, Laskey & McMurrer, $2,095.

Connecticut.

Naugatuck.—George Wigglesworth has been awarded the contract for plumbing and heating in two houses in Middlebury for H. B. Tuttle. He has just completed a big contract at Cold Spring Harbor, Long Island, N. Y.

Waterbury.—I. Levine will install the plumbing in the residence being erected for W. C. Adams at Fairmount. M. F. O'Hara has been awarded the contract for the plumbing and heating in connection with the improvements to Christ Church parsonage in Watertown; has completed plumbing in C. E. Spencer's residence on Church Street; and plumbing and heating in a residence in Brooks Vale for J. B. V. Thayer. H. H. Wilcox will install up-to-date plumbing in the new two-family house being erected on Oak Avenue for Charles Raino. The W. S. Carberry Co. is installing the plumbing in Antonio Mencinni's three-family house on High Street; plumbing in F. L. Tabers' laundry at Buck's Hill; Joseph Williams' two houses on Highland Avenue and Newton Terrace; and a hot water heating system in William Freter's house on Hamilton Avenue.

Norwich.—The contract for a heating plant at the American Thermos Co's. new building, now in process of construction, has been awarded to J. P. Barstow & Co. The contract price is about $10,000. There was but one other bidder, Thomas F. Burns.

Hartford.—Among the contracts recently undertaken by Langdon & Sullivan are: the alteration of the plumbing in the Allyn House; plumbing of a new two-apartment house on Brownwell Avenue for C. J. Burgess; hot water heating system in residence of Frank Lockwood on Asylum Avenue; and alterations to the plumbing at 18 Garden Street for A. H. Carlton.

Hartford.—Joseph E. Murray, plumber, has several good contracts on hand. They include the installation of a new hot air furnace in the residence of S. G. Dunham on Asylum Street; plumbing for buildings being erected by Alexander Hepburn on Montford Street; Melinshoff & Mehegan on Barker Street, and a three-apartment house for W. E. Anderson on the Boulevard.

Meriden.—James Pagnan and James Heslin have bought out the plumbing business of Frank Phelps on North Colony Street. They took possession October 1. Mr. Pagnan has for some time been employed by E. F. Kavanaugh and his partner has worked for Leonard, Gannon & Leonard. The stand which they have taken is an old established one and friends predict a successful business.

Bridgeport.—Carlson & Benson will install the plumbing in a store and tenement block to be erected on Kelsey Street for G. Vitale. There will be one store and two modern apartments. Plumbing and heating in connection with a house on Boston Terrace which is being erected for C. B. Ensign will be done by Josiah Mullins & Co. Frank Luciano has the contract for plumbing in a three-apartment house on Gem Avenue for Teresa Coggiano. Hebermeihl Brothers have the contract for plumbing in a new apartment house for R. W. Lacy on Main Street. The contract for plumbing and heating a new house on Alpine Street for C. O. Hoyt has been placed with C. S. Eames & Co. Max Weisner is erecting a business building on Stratford Avenue and has awarded the plumbing contract to W. H. Clark. A. E. Roberts will install the plumbing and heating systems in the new

house which is being erected on Connecticut Avenue for Mary Bolles.

Vermont.

E. Fairchild.—Keir Bros., of Craftsbury, have rented a store in the Warren building and have opened a plumbing and tinsmith establishment.

Rhode Island.

Woonsocket.—Bids for plumbing and heating the new Woonsocket armory have been received and contracts awarded. The plumbing contract went to E. J. Sullivan of Providence, at $3,820, and the heating to the J. F. McCaffrey Co., of Pawtucket, at $3,875. The list of bidders were as follows: Plumbing—Dennis McCarthy, Providence, $4,000; E. J. Sullivan, Providence, $3,820. Heating—J. F. McCaffrey Co., Pawtucket, $3,875; Dennis McCarthy, Providence, $4,668; Samuel Jackson, Pawtucket, $4,644; Dexter Engineering Co., Providence, $4,300; J. P. Dwyer, Boston, $4,265; Haslam Heating and Ventilating Co., Providence, $5,414; William H. Spaulding, Sayles-ville, $4,230.

Maine.

Bangor.—Contracts have been signed between the special high school committee and C. H. Babb & Co., for the plumbing of the new high school building, and between the committee and Wiley & Calhoun of Portland for the heating. The two contracts aggregate about $22,000.

Portland.—Bids are being asked for plumbing and heating work to be done in connection with the addition to the Deering High School now under construction. The bids are returnable October 12.

NEWS FROM PHILADELPHIA.

H. T. Campbell, 29th and Stiles Streets has been awarded the plumbing contract for the building being erected by the Hupmobile Co., Broad and Tioga Streets. This is quite a large-sized contract and will keep him busy until late in the fall.

Thos. J. Brennan, 25th and Lehigh Avenue, was the successful bidder for the plumbing and heating contracts on the five stores to be erected at 9th and Susquehanna Avenue.

Wm. Oakes, 254 S. 10th Street, has just been awarded the contract to do the plumbing in the New Hotel Finwick, at Wildwood, N. J. He also has the installation of vacuum cleaning systems in 94 houses at 53rd Street and Angora Avenue.

C. D. Fricka, 1328 N. 17th Street is installing new plumbing fixtures in the Womens' College at 3rd and Washington Avenue. Mr. Fricka's son has just associated himself in business with his father.

J. S. Kite & Co., 523 N. 40th Street, the well known plumbing establishment, has found that it pays to have an attractive and up-to-date show room. Recently a pedestal wash stand displayed by this company was greatly admired by a passer by who purchased it and had it shipped to his home in South America.

Wm. J. McCullif, 5940 Haverford Avenue, reports a busy season. In addition to other work he was recently awarded the plumbing and heating contract for 4 large houses on Lincoln Drive for E. A. Carroll.

NEWS FROM PITTSBURGH AND VICINITY.

On October 11th an examination will be held in Pittsburgh for a sanitary engineer, the salary of which is placed at $2,000 per annum.

Earl O. Talbert has resigned his position as general manager of the Daily Herald Pub. Co., of Wellsburg, W. Va., and has become identified with the Warder Heating & Furnace Co., of that place. He will have charge of the office management of this company.

The largest plumbing contract in sight for Pittsburgh master plumbers is that of the new Hotel Augusta, which is to be 20 stories in height, contain 900 rooms, and which will be built on the site of the Griswold.

This house is to be built by the Iron City Hotel Co., of this city, from plans prepared by Architect F. K. Helmle, of No. 188 Montague street, Brooklyn, N. Y. Estimates are now being taken.

The Columbus Heating & Ventilating Co., of Pittsburgh, has received the contract for the heating and ventilating for the new school being built at Natrona, Pa.

Higgins & Co., of Pittsburgh, will do the heating contract work in the new parochial school and chapel for St. Paul's Cathedral, of Pittsburgh.

The heating contract has been awarded to the Bartley-Kennedy Co., of Pittsburgh, for the work in the new laundry and power plant of the Montifore Hospital, of this city.

The McGinnis Co. has been awarded the heating contract in the new $10,000 residence at Oakmont, Pa., being erected by Mrs. Jane Berger.

The Modern Heating Co. has been given the heating and ventilating contract in the new residence of A. H. Miller.

The Castle Shannon Plumbing Co., of Pittsburgh has been awarded the plumbing contract in the Castle Shannon Methodist Protestant church.

George B. Stewart, the East End plumbing contractor, has patented a new house heater for steam or hot water, and has placed it on the market.

John O. Gilmore, credit manager of the Bailey Farrell Manufacturing Co. has returned with his family from a vacation spent at Ocean Grove, N. J.

T. M. Lenfesty Company, of Carnegie, is installing the heating in the First Methodist Episcopal Church, and the plumbing in the United Presbyterian church, Carnegie. The firm is erecting a large three-story building on its present site.

The building boom in the South Hills residence district is benefiting the plumbing firms and supply houses in that section of the city, while the improvements in connection with the "Hump" cut is keeping practically all the firms busy. This is bringing about a building boom such as local firms have rarely enjoyed.

The Pittsburgh Industrial Development Commission has circulated more than 15,000 booklets setting forth the plumbing interests of the city in the recent tour of the "Made-in-Pittsburgh" train through the western states.

Oswego, N. Y.—Hennessy Bros. have a splendid contract under way in that of a $7,000 plumbing, heating and ventilating installation in the St. Francis Orphanage, in this city. They have just secured a $6,000 contract for the plumbing and heating work in the Tuberculosis Hospital, at Orwell, Oswego County.

CONTRACTS AWARDED.

Lafayette, Ind.—Contract to repair the plumbing on several buildings in connection with the Soldiers' home has been awarded to the Lane & Pyke Co.

Roanoke, Va.—Engleby & Bro., of this city, have secured contract for the plumbing work in the new Stewart Circle hospital at Richmond, Va. The amount of the contract will approximate $7,000. In addition to this, the same firm has plumbing contracts for the Marion Female School; the state building for the criminal insane, at Marion; the high school, at Narrows, Va.; the new railway machine shops at Portsmouth, O., Princeton, W. Va., and Sewell's Point, Va.

Chester, Pa.—Wm. Fowden is installing the plumbing in the Crozier Seminary, in this city.

Folsom, Pa.—A. T. Phillips, is enjoying a prosperous year. He reports plenty of heating and plumbing work on hand, and is at present installing a heating system in the residence of Mr. Whittier, of Swarthmore, Pa.

Salem, Ore.—W. H. Rogers, of this city, was awarded the contract to install a heating system in the new addition to the state school for the feeble-minded, consideration, $2,208. The plumbing contract for same was secured by T. M. Barr, of Salem, at a figure of $2,794.

Pine Bluff, Ark.—The Pine Bluff Plumbing & Heating Co. has the following contracts on hand: Installing plumbing and heating systems in the new residence of V. O. Alexander, and to install the cold storage fixtures for the building to be occupied by the Sulzberger & Sons Co., on East Third avenue.

Yoakum, Tex.—Contract for the installation of a steam heating plant in the public school building has been awarded to C. H. George, of this city, at a price of $3,496.

Pittsburgh, Pa.—The Knoxville Plumbing Co., 137 Bausman Street, Knoxville, has secured the contract for the installation of a plumbing system in the new addition

to the factory of the Orentson Koppel Co., at Koppel, Pa.

Wilkes Barre, Pa.—J. T. Evans has been awarded the contract to install a heating system in the twin residences of Mrs. Phillips and Mr. Jenkins, of this city.

Salem, N. J.—W. H. Custer & Son have secured the contract to install a heating plant in the residence of Mrs. U. P. Green.

Flemington, N. J.—Stothoff Brothers have been awarded the contract to install a heating system in the residence of J. E. Farmer.

Pittsburgh, Pa.—John M. Tate Co., 126 Second Avenue, has secured the contract for the plumbing of the new Y. M. C. A. building at East Liverpool, O.

Wilmington, Del.—John B. Dunbar has the contract to install a heating plant in the residence of D. L. Topkis.

Wantagh, L. I.—Place & Allen have been awarded the contract to install a heating plant in the residence of F. C. Schaardt.

Haverstraw, N. Y.—Ethelbert Benson has been awarded the contract to install a heating plant in the residence of Miss W. S. Gilmore, Stony Point, N. Y.

Pittsburgh, Pa.—W. N. Sauer Co., 804 Chestnut Street, North Side, has been awarded the contract for the installation of an up-to-date plumbing system in the Carnegie Technical School.

Middletown, N. Y.—George A. Swalm & Son have secured the contract to install a heating system in the residence of J. W. Slauson, of this city.

New Rochelle, N. Y.—Valentine Brothers have the contract to install a heating plant in the garage and residence of C. P. Lambprey.

Lemoyne, Pa.—George W. Palmer has been awarded the contract to install a heating plant in the residence of Carl Dean, and in the store and residence of C. M. Mussellman, of this city.

Pittsburgh, Pa.—Geo. H. Soffel Co., 425 Second Avenue, has secured the contract for the installation of a modern plumbing system in Geo. A. Kelly's warehouse in this city.

Allentown, Pa.—C. A. Evans has been awarded the contract to install a heating plant in the residence of George Miller, of this city. Seagreaves & Koons, have been awarded the contract to install a heating plant in the stores and apartments of Milton A. Flexer, of this city.

Easton, Pa.—Edward C. Fairer has secured the contract to install a heating plant in the residence of Amos Dinkey.

Lansdale, Pa.—R. S. Heckler has been awarded the contract to install a heating system in the residence of Dr. H. O. Williams.

Pittsburgh, Pa.—The Stinson-Kennedy Co., 307 Wood Street, has been awarded the contract for plumbing the Historical Society's new building at Shenley Farms in this city.

Cleveland, O.—The Brainard Plumbing Co., 2062 E. 22d Street, report a very busy season. Some of the contracts they have on hand are: installing plumbing in the W. G. Marshall building, consideration, $15,000; in the W. S. Tyler Wire Works factory, $16,000; in the annex of the Cleveland Worsted Mills, $5,000.

Cleveland, O.—P. J. Pickett, 7407 Superior Avenue N. E., is enjoying a satisfactory season. He has the following contracts on his books; Plumbing in the K. O. Graf residence; in the Buschkott residence on Fairchild Avenue; in the Scott residence; in a double house for H. Frederick, and several others, amounting in all to over $7,000.

North Wales, Pa.—George K. Morris has secured the contract to install a heating plant in the residence of Simon Sionskey, Spring House, Pa.

Bridgeport, Conn.—R. T. Rock has been awarded the heating contract in the residence of Robert N. Sperry.

New Haven, Conn.—Menzies & Menzies have been awarded the contract to install a heating plant in Mr. Miller's office Building, of this city.

Albany, Mo.—F. B. Thomas & Company, have secured the contract to install a heating system in the Gentry County Court House, of this city.

Sedalia, Mo.—Sellers-Ricketts Company have secured the heating contract in the residence of Fred Schenks.

St. Mary's, Kan.—William Gebhardt has been awarded the contract to install a heating plant in the bungalow of Doctor Miller, and also in the St. Mary's Church and School Buildings, of this city.

Wichita, Kan.—The Square Deal Plumbing Company has secured the contract to install a heating plant in the residences of Dr. Miller, Dr. Fred A. Dobson and N. M. Odell, of this city, and also in the residence of J. L. Tuttle, Genda Springs, Kan.

Washington, D. C.—The Biggs Heating Company has just secured the plumbing contract for a new building at 1225 G street, N. W. in this city. The approximate cost of the installation being quoted as $4,350. This company has recently secured the services of James Cunningham, one of the pioneer plumbers of the District of Columbia, as superintendent of its plumbing department.

Cleveland, O.—Chas. F. Seifried, 8410 Hough Avenue, reports an unusually busy season. He has on hand contract to install the plumbing in a five-story building on Bolivar Road, amount $2,000; the plumbing in a number of residences at Cleveland Heights, about $5,000; and a number of remodeling contracts aggregating $10,000.

Coalinga, Cal.—The Coalinga Tank and Plumbing Co. is remodeling the bath and barber establishment owned by Wooten & Walker on F Street. W. J. England Co. has the contract for plumbing several cottages belonging to W. L. Baird on Sunset Avenue. Wm. Wallace is installing plumbing in a residence for L. S. Stepp on Buchanan Street and also in the home of W. R. Colton on Valley Street. He has several other contracts under way in different parts of the city. The restricted portion of the city that was destroyed by fire a short time ago is rebuilding and the same will furnish considerable work for the plumbing and heating men. The new codified plumbing ordinance going into effect soon will help the sanitary condition of the city in several ways. Among other changes the use of slop hoppers on the rear of lots with a toilet in an out building, called "mules," have been discontinued and all fixtures must be as conveniently located for the use of the housewife as possible to encourage use of the sewer as a means of disposing of all liquid wastes. The Plumbing Inspector has been given charge of the city sewers and the sewerage disposal plant, formerly in the care and under the supervision of the city engineer.

"Domestic Engineering's" Sworn Statement, Made Under the New Postal Law.

Statement of the Ownership, Management, etc., of "Domestic Engineering," published weekly at Chicago, Illinois, required by the Act of August 24, 1912.

NOTE—This statement is to be made in duplicate, both copies to be delivered by the publisher to the postmaster, who will send one copy to the Third Assistant Postmaster General (Division of Classification), Washington, D. C., and retain the other in the files of the postoffice.

Name of Post Office Address

Editor—R. Herlov, 2412 Pleasant Place, Chicago.

Managing Editor—R. Herlov, 2412 Pleasant Place, Chicago.

Business Manager—F. P. Keeney, Illinois Athletic Club, Chicago.

Publisher—Domestic Engineering Co., 445 Plymouth Court, Chicago, Illinois.

Owners: (If a corporation, give names and addresses of stockholders holding 1 percent or more of total amount of stock.)

F. S. Kenfield, 1623 East 51st Street, Chicago.
A. T. Leach Estate, Harris, Mo.
F. P. Keeney, Illinois Athletic Club, Chicago.
W. J. Sweeney, Peoples National Bank Bldg., Rock Island, Illinois.
O. T. Carson, 1579 East 86th Street, Cleveland, Ohio.
E. R. Ford, 1816 North Winchester Avenue, Chicago.

Known bondholders, mortgagees, and other security holders, holding 1 percent or more of total amount of bonds, mortgages, or other securities:

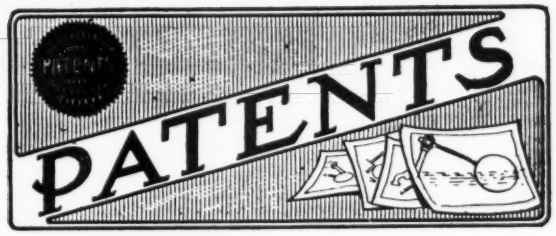
John K. Allen, 43 Salisbury Road, Brookline, Mass.
F. P. Keeney, Illinois Athletic Club, Chicago.

(Signed) F. P. Keeney, Business Manager.

Sworn to and subscribed before me this 30th day of September, 1912.

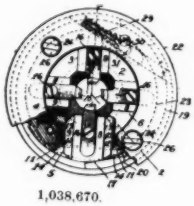
(Seal) (Signed) F. J. Sauer, Notary Public.

(My commission expires Sept. 16, 1916.)



Heating Department.

1,038,670. Threading-die. Oscar A. Smith, Cleveland, Ohio, assignor to The National-Acme Manufacturing Co., Cleveland, O., a corporation of Ohio. The combination of a die body and shank, said body having an axial bore and provided with ways, members having thread cutting means movable radially in said ways, each of said thread cutting members having a pair of cam surfaces extending in opposite directions, shiftable means having a forward and backward movement relatively to said body and shank and beyond which the shank projects for attachment to its holding means for closing the thread cutting members by engagement with one of said cam surfaces and also having a swinging movement to adjust the thread cutting members on the swinging of said means relatively to the other of said cam surfaces, means for shifting said shiftable means, and means for holding said shiftable means and its shifting means in operative relation thereby to prevent premature independent movement of said shiftable means in any direction relatively to said thread-cutting members.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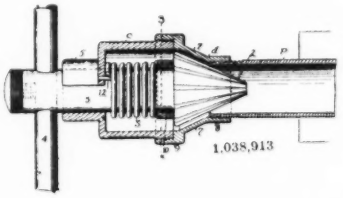
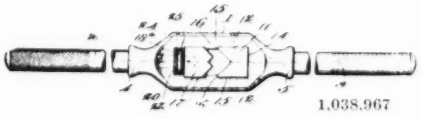
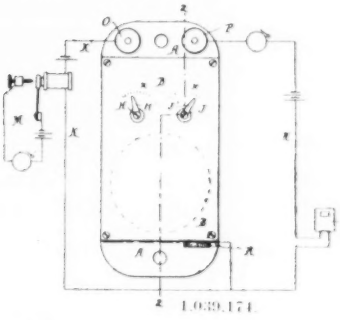

1,038,913

1,038,913. Pipe-reamer. John R. Long, East Akron, Ohio. A pipe-reaming device comprising a body having a tubular extension of reduced cross section at its rear and threaded externally at its front and a coupling member screwed onto the front of said body and threaded in its smaller diameter, in combination with a reaming tool in said body having a shank extending through said extension, a collar on said shank at the base of said tool and a spring confined within said body coiled about said shank and bearing against said collar and a handle through said shank adapted to bear against said extension and limit the thrust of the tool forward under the action of said spring.


1,038,967

1,038,967. Tap-wrench. Whitman Russell, Greenfield, Mass. In a tap wrench, the combination of a stock member having a central rectangular opening with a mortised section; handles secured to said stock member; a jaw fixed within said opening and seated against the four surrounding faces of said mortised section; a jaw movably mounted on the stock member within said opening; a screw shank carried by said movable jaw; and an adjusting nut for the movable jaw mounted on said screw shank intermediate the movable jaw, and an end wall of said stock member, substantially as described.

1,039,174. Thermostat. Ernest Moss, Dallington, Christchurch, New Zealand. In a thermostat, the combination of a metallic casing; a front cover fitting thereon and having a recess in the lower part of its inner face; a flexible inner wall secured over said recess and forming therewith a receptacle; an expansive fluid in said receptacle; a stud secured to said flexible wall and having an angular end portion spaced from said wall; separate insulating blocks secured at the upper corners respectively of the inner face of said cover; spaced approximately parallel pending arms secured to said blocks respectively and each having an inclined lower end disposed respectively to the front and the rear of said angular end of the stud; regulating screws passing through said cover and engaging said arms respectively; pointer arms on said screws respectively; and a scale under each pointer and on the front of the cover.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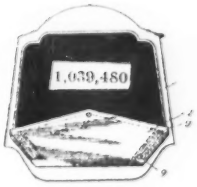
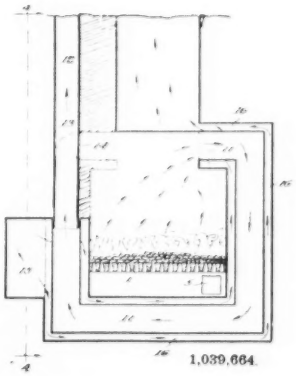
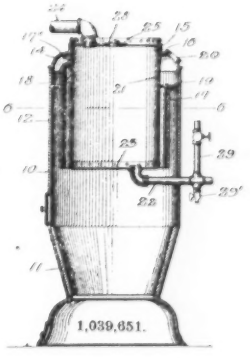


1,039,480. Radiator-Shield. Frank F. Bassett, Lawrence, N. Y. The combination with a radiator having a plurality of passageways or openings therethrough, of a shield for said radiator formed with socket members, and a plurality of supporting members extending into said openings or passageways and detachably secured to said radiator, each of said supporting members being formed with a stud fitting into said socket members for detachably securing said shield to the supporting members so as to occupy a position in front of said radiator.

1,039,664. Heating and Ventilating Apparatus. Clarence William Edgar, Los Angeles, Cal. In a heating and ventilating device, a grate provided with conducting side walls and having a transparent air tight covering, a pipe for supplying air underneath the grate, a damper for regulating the air supply, an exit pipe communicating with the top of the grate and extending down one side thereof, underneath and up on the other side of the


1,039,664

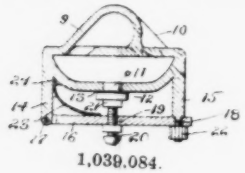


grate, an air passage surrounding said exit pipe and the conducting side walls and having its intake on the side of the grate opposite the point of communication of the exit pipe with the top of the grate, and a hot air flue communicating with said air passage and being provided with registers for permitting the exit of hot air.

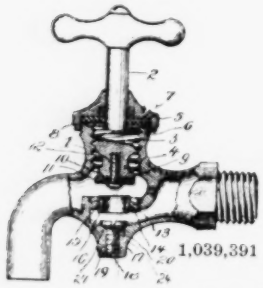
1,039,651. Water-Heater. John T. Cullen, jr., Clinton, Iowa. A water heater consisting of a tank extended within a furnace, a heat retaining jacket, the walls of said jacket being spaced from the tank, said jacket being provided with a reduced annular extension embracing said tank, a baffle plate, said plate being formed with a flange, said flange being secured to the wall of said furnace, the edge of said plate remote from said flange contacting with said tank, said jacket being cut away adjacent said baffle plate, and a flange formed integral with said jacket and secured to said plate.

Plumbing Department.

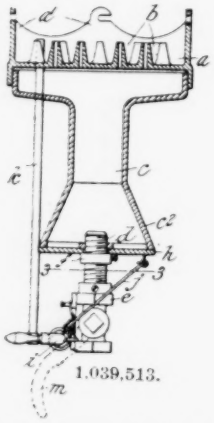
1,039,084. Sprinkling Device. Elbridge S. Bickford, Bristol, N. H. The combination with a rotary sprinkler having inlet and outlet openings therein; of a pair of integral stems depending from said casing, the lower end of one of said stems being reduced and threaded, a bar pivoted to the other stem, means carried thereby for closing said outlet opening, a fusible nut threaded on the reduced end of said stem and engaging the free end of said bar, and a spring carried by said sprinkler and engaged against the upper face of said bar whereby when the free end of the latter is released it will be thrown into a vertical position and out of the path of the fluid issuing from the outlet opening.



1,039,084.



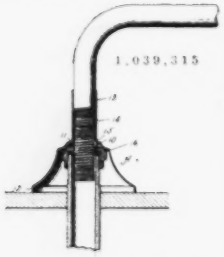
1,039,391



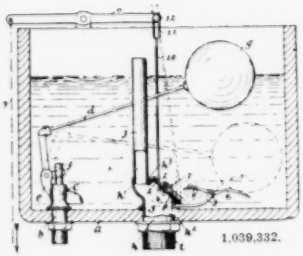
1,039,513.

1,039,391. Valve. Edwin Hazelip, Baltimore, Md., assignor of one-fourth to Thomas B. Trimble, Baltimore, Md., and one-half to Alexander L. Cummings, Melvale, Md. A valve seat comprising a hollow member, a support having an aperture therein and adapted to slidably receive the said seat, a removable valve seat extracting element disposed immediately below the said seat and arranged in axial alinement therewith, the said extracting element being formed to provide a head having a slightly lesser diameter than that of said seat, the said extracting element being adapted to move in an upward direction whereby the said head engages the lower end of the said seat so as to move the same to an extracted position from the support.

1,039,513. Burner. George C. Gill, Holyoke, Mass., assignor to Barlow Company, Holyoke, Mass., a corporation of Massachusetts. In a device to prevent back firing in a gas burner, the combination with said burner, means for supplying gas and means for supplying air thereto, a shutter to control the air supply to the burner, of an igniting device for the burner, a gas supply pipe leading to the igniting device, means in said gas supply pipe to control the flow of gas therethrough, and a device connecting the shutter and said gas controlling means in the gas supply pipe to close the shutter when the gas controlling means is opened and to open the shutter when said gas controlling means is closed.



1,039,315.

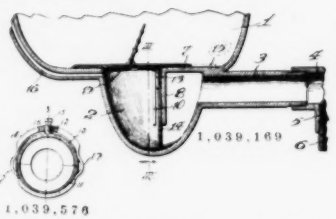


1,039,332.

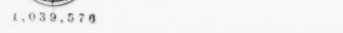
1,039,315. Box-Flange for Pipe-Couplings. Henry Mueller, Decatur, Ill.; Ora B. Mueller and Adolph Mueller, executors of said Henry Mueller, deceased, assignors to H. Mueller Manufacturing Co., Decatur, Ill., a corporation of Illinois. In combination with a section of pipe, a second section of pipe adapted to telescopically engage with said first mentioned section, and a coupling nut for adjustably securing together the sections, of a flange box adapted to conceal the joint, said flange box comprising a dished member having a relatively broad base and a contracted open neck, and a sleeve adapted to envelop one of said pipe sections and to contact with said coupling nut whereby displacement in one direction may be prevented, said sleeve also being flared at one end whereby displacement in an opposite direction is prevented.

1,039,332. Flushing Apparatus. Archibald Summers, Paterson, N. J. In combination, with a tank and a float arranged therein, an outlet member for the tank having an upwardly open discharge port, a lever of the first kind having one arm longer than the other and being fulcrumed on a horizontal axis in said member with its short arm projecting toward said port, and a lever-structure fulcrumed in said member on a horizontal axis relatively between said port and the axis of said lever, said lever-structure being movable relatively over its axis past its center of gravity, in one direction against said member, and in the other against the short arm of said lever, and including a valve adapted to seat against said member, over said port, the float being above and adapted to impinge against the long arm of said lever on descending substantially as described.

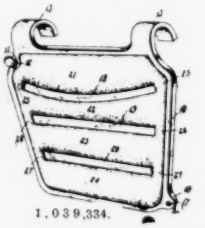
1,039,169. Combination Trap and Fixture. Adolph Meyer, St. Louis, Mo., assignor of one-half to Paulina Weidemann, St. Louis, Mo. In a device of the character described, the combination with a sink or basin provided with a well into which it discharges, of a drain pipe leading from said well adjacent the bottom of said sink or basin in such manner as to retain a body of water within said well, a partition depending into the water within said well and providing an air-tight cover about the opening into said drain pipe, said partition being provided with a removable strainer plate reaching to the bottom of said well, and said strainer plate being provided with a horizontal portion provided with strainer openings and extending across the opening between said sink or basin and said well.



1,039,169.



1,039,576



1,039,334.

1,039,576. Seal for Pipe-Couplings. Philip Mueller and Anton C. Schuermann, Decatur, Ill., assignors to H. Mueller Manufacturing Co., Decatur, Ill., a corporation of Illinois. A seal for couplings comprising two incasing members one of which members has a depression in a portion of its outer surface, a continuous sealing member of frangible material provided with a weakened portion which member embraces said incasing members and holds them together, a part of the body of said sealing member being seated in said depression, and an irremovable means associated with said sealing member and adapted to bear on the other of said members to retain the sealing member in said depression.

1,039,334. Bath-Cushion. William C. Trick, Mount Vernon, Ohio. A cushion rest for bath-tubs, comprising a bag united at its marginal edges, means for suspending the bag from the edge of the tub, said bag having the filling opening, the rear wall of said bag being plain, the front wall of said bag being secured to the rear wall along transverse lines at a number of points intermediate of the top and bottom edges, said lines of attachment terminating at suitable distances from the side edges of the bag, whereby a plurality of transverse channels and vertical connecting channels are formed.

Healthy Apartments in the Country.

"Dear me! What an unpleasant odor! Can it be the drains?"

"Can't be the drains, miss, 'cos there ain't any."